A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

Vol. 893 Number 2

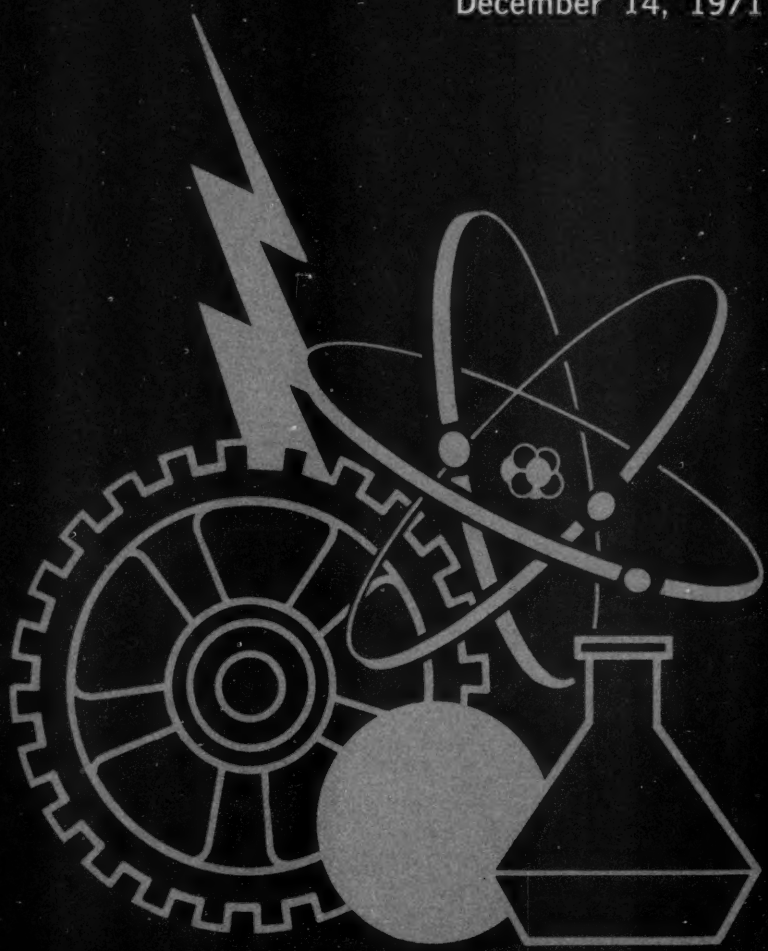
OFFICIAL GAZETTE

of the

UNITED STATES PATENT OFFICE

PATENTS

December 14, 1971



U. S. DEPARTMENT OF COMMERCE

Patent Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

December 14, 1971 Volume 893 Number 2

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PATENT OFFICE NOTICES

Availability of Annual Report on Government Patent Policy

The Combined December 1969 and 1970 Annual Report on Government Patent Policy of the Federal Council for Science and Technology recently has been published.

The report assesses the effectiveness of the 1963 Presidential Statement of Government Patent Policy based on the information available from the seven years' operation, and describes the progress made to date by the Committee on Government Patent Policy.

The report contains:

The revised Memorandum and Statement of Government Patent Policy issued by President Nixon on August 23, 1971 and an explanation of the revisions.

A report on a Government-wide comprehensive patent licensing program. This report contains the proposed licensing regulations to be promulgated by the General Services Administration. It also contains legal memoranda of the Department of Justice which discuss the concept of issuing limited exclusive licenses on Government-owned Inventions.

A statistical analysis of the Government's patent operations for fiscal years 1963 through 1970. This report includes the total number of invention disclosures reported to the Government agencies, the type of patent clauses used in R & D contracts, the extent of patent protection sought by the Government, and the available information on the licensing of Government-owned patents.

A list, by agency, of all statutes, memoranda and regulations pertaining to the allocation of rights to inventions. This list also contains the identity of the office within each agency which has the primary responsibility for Government patent policy matters.

Information on the merger of the Patent Advisory Panel and the Committee on Government Patent Policy of the Federal Council for Science and Technology.

The report may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, for $1.25. A check or money order made payable to the Superintendent of Documents must accompany your order.

O. A. NEUMANN,
Executive Secretary,
Committee on Government Patent Policy
Federal Council for Science and Technology.

Certificates of Correction for the Week of Dec. 14, 1971

D. 218,206	3,567,715	3,582,150	3,586,833
3,328,213	3,568,183	3,582,263	3,586,887
3,437,309	3,570,680	3,582,318	3,586,946
3,495,057	3,572,595	3,582,476	3,587,330
3,501,325	3,573,323	3,582,495	3,587,749
3,502,834	3,573,324	3,582,535	3,588,121
3,527,746	3,573,667	3,582,728	3,588,429
3,528,377	3,574,232	3,582,836	3,588,462
3,535,647	3,574,343	3,583,648	3,588,984
3,541,056	3,574,443	3,584,460	3,589,082
3,541,775	3,575,645	3,584,506	3,589,398
3,542,502	3,576,561	3,584,789	3,589,794
3,547,877	3,576,811	3,585,214	3,590,626
3,556,762	3,577,782	3,585,456	3,591,257
3,558,053	3,577,904	3,585,510	3,591,686
3,559,049	3,579,292	3,585,634	3,592,392
3,561,571	3,580,908	3,586,091	3,593,111
3,563,493	3,581,134	3,586,094	3,593,824
3,563,924	3,581,217	3,586,415	3,594,585
3,563,947	3,581,638	3,586,570	3,598,685
3,563,975	3,581,744		

Dedication

3,220,100—*Frank L. Christensen,* Saratoga, Calif. APPARATUS FOR UNPLUGGING LEAD BONDING CAPILLARY TOOLS. Patent dated Nov. 30, 1965. Dedication filed Aug. 11, 1971, by the assignee, *Tempress, Inc.*

Hereby dedicates to the Public the entire term of said patent.

Disclaimers

3,081,966.—*Harold T. Avery,* Oakland, Calif. ROTATING WING AIRCRAFT. Patent dated Mar. 19, 1963. Disclaimer filed Sept. 30, 1971, by the assignee, *Honeywell Inc.*

Hereby enters this disclaimer to claims 50, 51, 52 and 53 of said patent.

3,365,717.—*Hobbe D. Hölscher,* Johannesburg, Transvaal, Republic of South Africa. METHOD OF AND APPARATUS FOR PROVIDING A MEASURE OF THE DISTANCE BETWEEN TWO SPACED POINTS. Patent dated Jan. 23, 1968. Disclaimer filed August 30, 1971, by the assignee, *South African Inventions Development Corporation.*

Hereby enters this disclaimer to claims 1–5, 7–10, 12, 14 and 16 of said patent.

3,445,077.—*Joseph I. Cole,* Staten Island, and *Harold S. Moss,* Brooklyn, N.Y. STRAND DISTRIBUTING AND RECEIVING APPARATUS AND METHOD. Patent dated May 20, 1969. Disclaimer filed Oct. 7, 1971, by the assignee, *Nassau Smelting and Refining Company, Incorporated.*

Hereby enters this disclaimer to claims 1, 2, 3, 11, 12 and 16 of said patent.

3,544,583.—*Emmett H. Burke, Jr.,* Glenwood, Ill., and *Donald D. Carlos,* Crown Point, Ind. CYCLOALIPHATIC MONO (NITRILE SULFITES). Patent dated Dec. 1, 1970. Disclaimer filed Aug. 28, 1970, by the assignee, *Atlantic Richfield Company.*

Hereby disclaims the terminal portion of the patent subsequent to Sept. 28, 1988.

3,563,757.—*David A. Dixon,* San Anselmo, Calif. APPARATUS FOR MINIMIZING PERISHABLE PRODUCTS. Patent dated Feb. 16, 1971. Disclaimer filed Oct. 13, 1971, by the assignee, *Oxytrol Corporation.*

Hereby disclaims all that portion of the term of the patent subsequent to Aug. 30, 1983.

3,584,858.—*Merrill G. Beck,* Erie, Pa. COMPRESSION SPRING. Patent dated June 15, 1971. Disclaimer filed Oct. 18, 1971, by the assignee, *Lord Corporation.*

Hereby disclaims the terminal portion of the patent subsequent to July 22, 1986.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 30, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-09-70
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	5-13-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	10-09-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	5-13-70
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-05-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	3-30-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	5-21-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-26-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-16-71
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	9-28-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	10-22-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	9-02-70
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	9-02-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	8-17-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	12-01-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	10-06-70

Expiration of patents: The patents within the range of numbers indicated below expire during December 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,695,998 to 2,698,433, inclusive
Plant Patents..... Numbers 1,328 to 1,338, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED DECEMBER 14, 1971

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T893,001

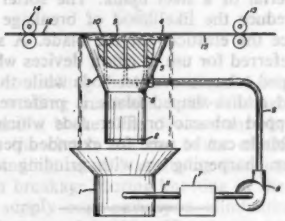
ULTRASONIC CLEANING PROCESS AND APPARATUS

John D. Fisler, Kodak Park Works, 1669 Lake Ave., Rochester, N.Y. 14650

Filed Mar. 12, 1970, Ser. No. 18,884

Int. Cl. B08b *3/10*; G03g *13/00, 15/00*
U.S. Cl. 134—1

1 Sheet Drawing. 10 Pages Specification



Ultrasonic energy is used to create turbulence in a bead of liquid through which is a xerographic element is moved for removing toner particles from the image-bearing surface thereof, thereby preparing the element for further use. The toner particles can be distributed over the surface in the form of an image or as residual toner particles that were not picked up in the course of transferring the image to a receiver sheet. The liquid is continuously circulated and a device is included for filtering out the toner particles that have been removed.

T893,002

METHOD FOR THE SELECTIVE CONTROL OF ANNUAL GRASS

Harvey D. Bidlack, 4272 E. Isabella County Line Road, Shepherd, Mich. 48883, and William T. Irvine, 842 Scheurmann Road, Bay City, Mich. 48706

Filed May 7, 1970, Ser. No. 35,557

Int. Cl. A01n *9/22*
U.S. Cl. 71—92

No Drawing. 10 Pages Specification

A new composition and method for the suppression of the growth of annual grass of the genus Digiteria, and particularly for the preemergent control of crabgrass by exposing crabgrass seeds to a composition comprising a growth suppressing amount of a 4-substituted cinnoline, in particular, 4-cinnolinecarbonitrile.

T893,003

FLUORESCENT MULTICOLOR ADDITIVE SYSTEM

Robert Joseph Tulte, % Eastman Kodak Company, Kodak Park Division, Rochester, N.Y. 14650

Filed Sept. 8, 1970, Ser. No. 70,546

Int. Cl. C09k *1/02*; G03c *1/92*
U.S. Cl. 96—82

No Drawing. 12 Pages Specification

A novel additive color system which is colorless under visible light but which is transformed in the additive manner into the visible primary colors upon exposure to ultraviolet radiation so as to produce the complete range of colors of the visible spectrum. With respect to photographic products the system contains a blue emitting optical brightener, a colorless terbium complex or chelate which emits in the green region of the visible spectrum and a colorless europium complex or chelate which emits in the red region of the visible spectrum. The luminescent materials all absorb in the UV region of the spectrum (330–380 nm.), but can be superposed in separate layers without undue loss in luminescence intensity resulting from absorption of the existing UV radiation by the overlying layers. The color system can be typically employed in photo-mechanical image reproductions; as inks; as xerographic toners; in photopolymerizable coatings; in conventional color photographic reflection and transparent prints in order to provide highlight masks for the unwanted absorptions of the cyan, magenta and yellow dyes and to provide extended tonal range; and in contact screens. The system can also be applied to non-mechanical uses, such as in paints, pigments, inks, pencils, crayons, etc. for sketching; in yarn, glass, etc. for unusual and useful effects.

The photographic silver halide emulsions and elements containing the optical brighteners and rare earth complexes can be chemically sensitized, e.g., with noble metal sensitizers alone or in combination with sulfur or selenium sensitizers. They can contain spectral sensitizers, incorporated color-forming couplers, incorporated developing agents, antifoggants, hardeners plasticizers, coating aids, and other suitable photographic addenda, such as described in U.S. Pat. 3,297,446 (columns 4–9).

T893,004

BLOCK COPOLYMERS OF BUTADIENE AND STYRENE

William Glenn Mayes, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation of application Ser. No. 658,550, Aug. 4, 1967. This application Oct. 12, 1970, Ser. No. 80,249

Int. Cl. C08f *15/04*
U.S. Cl. 260—880 B

2 Sheets Drawing. 14 Pages Specification

New copolymers of butadiene and either styrene or a styrene-type monomer are formed in which all of the

styrene or styrene-type units are relatively uniformly distributed in butadiene at one or both ends of the molecule, and the balance of the molecule is composed of butadiene. Tire treads made from the copolymers exhibit better wear resistance than other butadiene-styrene copolymers.

T893,005

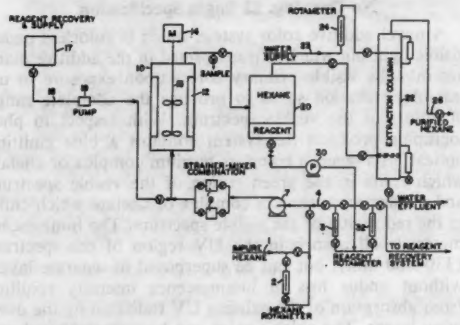
PROCESS FOR REMOVING CARBON DISULFIDE FROM AN ORGANIC SOLVENT BY EMULSIFICATION EMPLOYING AN ALCOHOLIC ALKALI HYDROXIDE

Hossein Moosavian, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation of application Ser. No. 654,199, July 18, 1967. This application Oct. 26, 1970, Ser. No. 84,257

Int. Cl. C07c *9/00*
U.S. Cl. 260—676

2 Sheets Drawing. 15 Pages Specification



Hydrocarbon solvent recovered from a composite of (a) elastomer derived from a latex in which a dithiocarbamate has been used as a short-stopping agent, and (b) elastomer derived from a solution of the elastomer in said solvent, such as a rubber masterbatch which contains (1) carbon black, (2) oil, (3) elastomer derived from a latex in which a dithiocarbamate has been used as a short-stopping agent, and (4) elastomer derived from a solution of the elastomer in said solvent, is treated for removal of carbon disulfide generated from the dithiocarbamate. This is accomplished in a continuous process by first converting the carbon disulfide to water-soluble xanthate with a solution of a sodium or potassium hydroxide and methanol, and subsequently separating the xanthate from the solvent. The unreacted methanol-hydroxide reagent which is immiscible with the solvent separates from the solvent and on continued use becomes saturated with xanthate. Any further xanthate formed is carried with the solvent and is separated from it by washing with water, preferably by countercurrent extraction. The reagent is reused in the treatment of further solvent by recirculation, and its concentration is maintained by withdrawing some of the used reagent and adding some fresh reagent.

The reagent used is prepared by dissolving 10 or preferably 15 to 25 percent, and usually about 17 percent, of substantially anhydrous sodium or potassim hydroxide in 80 to 95 percent methanol. During the treatment of the solvent, water is formed, and after the operation has been functioning for several hours the reagent used contains about 15 to 30 percent of water. The solvent is usually hexane or other aliphatic hydrocarbon of 4 to 7 or 8 carbon atoms, but an organic solvent such as benzene or toluene may be employed.

T893,006

BLADE FOR CUTOFF DEVICES IN TOBACCO PROCESSING MACHINES AND METHOD OF MAKING THE SAME

Fritz Wenninger, Mechanicsville, Va., assignor to Hauni-Werke Korber & Co. KG, Hamburg, Germany

Filed Dec. 3, 1970, Ser. No. 94,789

Int. Cl. B26d *1/12*
U.S. Cl. 83—663

2 Sheets Drawing. 17 Pages Specification

The blade of a cutoff device or severing device for wrapped tobacco or filter rods, particularly for severing of filter rods, is a one-piece body consisting of chromium steel or another steel alloy and having a relatively hard layer and one or two softer outer layers. The hard layer has a sharply defined wedge-shaped cutting edge which extends beyond the softer layer or layers. The imparting of different hardnesses to the layers of the blade can be carried out in a vacuum furnace by changing the texture of the material of a steel blank. The softer outer layer or layers reduce the likelihood of breakage or cracking and enhance the elasticity of the blade. A sickle-shaped blade is preferred for use in cutoff devices which serve to sever wrapped tobacco or filter rods while the rods move axially, and a disk-shaped blade is preferred for severing of wrapped tobacco or filter rods which move sideways. The blade can be used for extended periods of time without any sharpening or with grinding at infrequent intervals.

T893,007

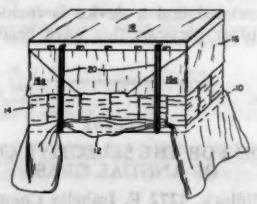
PROCESS FOR PACKAGING FIBROUS BALES

Robert Milton McCormick, 7907 Springpond Road, Columbia, S.C. 29204

Filed Jan. 5, 1971, Ser. No. 104,058

Int. Cl. B65b *27/12*
U.S. Cl. 53—27

2 Sheets Drawing. 4 Pages Specification

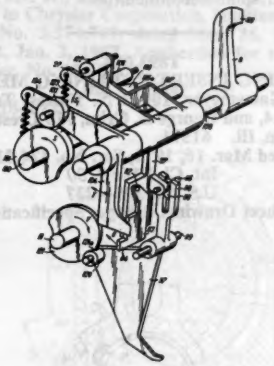


A process for packaging fibrous bales with flexible sheets of synthetic polymer without the need for prefabricating the sheets into bale configurations as, for example, in the form of sewn bags so they retain their shape around the bale during banding. The process utilizes elastic cords temporarily extended between the platens of the baler to hold the sheets in place as they are folded around the bale. After the bale is permanently banded, the elastic cords are released. The flexible sheets of synthetic polymer are preferably sheets of spunbonded synthetic fiber.

T893,008
DEVICE FOR CONTROLLING THE OPERATION OF A WINDING UNIT IN AUTOMATIC WINDING MACHINES

Vladimir Prasil, Brno, Czechoslovakia, assignor to Elitex, Zavody textilniho strojirenstvi generalni reditelstvi, Liberec, Czechoslovakia

Filed Jan. 8, 1971, Ser. No. 104,927
Int. Cl. B65h *54/22, 63/02*
U.S. Cl. 242—35.6 R
2 Sheets Drawing. 4 Pages Specification



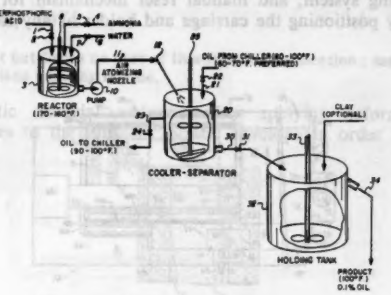
Device for controlling the operation of a winding unit in automatic winding machines, said winding unit having a clutch and a brake. The device controls the operation of both the clutch and the brake of the winding unit during winding, as well as during the automatic removal of yarn breakage, during knotting of the yarn end from a new supply cop, and upon eliminating pattern winding on the wound bobbin. The device has a series of cams and levers; a first lever forms on one hand a component of mechanism for disengaging the winding unit from the drive, and on the other hand a component of mechanism for controlling the clutch and the brake of the winding unit upon automatic removal of yarn breakage or upon knotting the yarn end of a new supply cop, said first lever constituting at the same time the main control element for engaging and disengaging a single-revolution clutch through which the bobbin driving distributor of the winding unit is driven.

T893,009
SELF-SUSPENDING AMMONIUM POLYPHOSPHATE SUSPENSION FERTILIZER

Fred D. Nix, Rte. 3, Phil Campbell, Ala. 35581

Continuation-in-part of application Ser. No. 836,386, June 25, 1969. This application Jan. 28, 1971, Ser. No. 110.537
Int. Cl. C01b *25/28;* C05b *7/00*
U.S. Cl. 71—34
4 Sheets Drawing. 34 Pages Specification

A process for improving the storage characteristics of ammonium polyphosphate clayless base suspension while increasing the grade up to 14–47–0 involves causing fine crystals of ammonium polyphosphate to be formed in the fresh suspension by close control of the P_2O_5 (80–81 percent) content of the superphosphoric acid fed thereto and quick cooling the product via water cooled heat exchange or direct contacting in a chilled fluid immiscible therewith. With this latter cooling method, spraying of the fertilizer into a specially designed cooling vessel results in an efficient cooling technique. Good storage properties result with fresh 14–47–0 products having about 80 percent of the P_2O_5 in polyphosphate form. The 14–47–0 can be converted easily to 11–37–0 clear solutions by addition of water. As 14–47–0 contains 27 percent more plant nutrient than 11–37–0, considerable savings result



PRODUCTION OF AMMONIUM POLYPHOSPHATE SUSPENSIONS COOLING BY DIRECT CONTACT WITH OIL

in shipping and storage costs by use of 14–47–0 to produce 11–37–0 at the destination point.

T893,010
PRODUCTION OF LAMINATES

David Fairclough Oxley, St. Albans, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Feb. 4, 1971, Ser. No. 112,819
Int. Cl. B29d *27/00;* B29f *1/00*
U.S. Cl. 264—45
No Drawing. 10 Pages Specification

A process for the production of laminates by sequentially injecting two or more synthetic resins into a mould in which a compound to improve the adhesion between the synthetic resins is also injected into the mould. The resins are maintained within the mould for sufficient time for them to set and for a bond to form between them with the aid of the adhesion improving compound. The process is particularly useful for articles having a cellular core and an unfoamed surface. The adhesion improving compound, which may itself be a synthetic resin, may be injected into the mould between the injection of the synthetic resins so that an adhesive layer is formed between them. Also, the adhesion improving compound may comprise two components which react with each other in which case each component is incorporated into adjacent layers of the synthetic resins so that the components react along the line defining the join between the synthetic resins to form a bond.

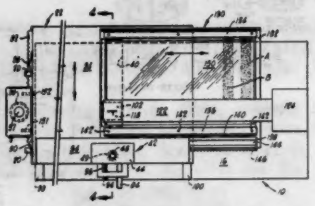
T893,011
AUTOMATIC TRACK CHANGING APPARATUS

George J. Hanggi and Theodore T. Martin, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Feb. 11, 1971, Ser. No. 114,429
Int. Cl. G01n *21/30*
U.S. Cl. 250—219 TH
3 Sheets Drawing. 28 Pages Specification

Apparatus for automatically moving a body in alternate transverse and longitudinal movements through a predetermined path, the successive transverse movements being in opposite directions to each other, and the successive longitudinal movements being in substantially the same direction. The apparatus includes a holder for supporting the body; a carriage slidingly supporting the holder; a transverse driving system for automatically driving the carriage in alternating bidirectional strokes in a transverse direction; a longitudinal driving system for automatically driving the holder in a single, selectively distanced longitudinal direction during a selected final increment of each transverse movement of the carriage; stroke termination and reversing means connected to said

transverse driving means and cooperating with the carriage to end each transverse stroke of the carriage, and to reverse the drive imparted thereto by the transverse driving system; and manual reset mechanism for manually positioning the carriage and holder at any location



desired within the carriage and holder positioning capability range of the transverse and longitudinal driving systems. The apparatus has a particular utility in an optical densitometer for analyzing chromatographic sample slides or plates.

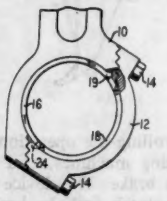
T893,012
LIQUID-FILLED FUSE CUTOUT WITH EXPLOSION RESISTANT METAL COVER
Edward A. Vrabel, Pittsfield, Mass., assignor to General Electric Company
Filed Feb. 16, 1971, Ser. No. 115,255
Int. Cl. H01h *85/40*
U.S. Cl. 337—277
1 Sheet Drawing. 7 Pages Specification

A liquid-filled, fused circuit interrupter is provided having a fluid-holding container that is covered and sealed with a metal cover which is characterized by having a Brinell Hardness that is less than the Brinell Hardness of prior art oil-filled cutouts having equivalent high current interrupting ratings.

T893,013
PROCESS FOR PRODUCING SPINNABLE, BASIC DYEABLE (POLYETHYLENE TEREPHTHALATE) COPOLYESTERS
Charles J. Kibler and Bobby J. Sublett, both of P.O. Box 511, Kingsport, Tenn. 37462
Filed Mar. 10, 1971, Ser. No. 123,088
Int. Cl. C08g *17/013*
U.S. Cl. 260—75 S
No Drawing. 12 Pages Specification

Preparation of basic-dyeable poly(ethylene terephthalate) and analogous copolyesters having improved spinning characteristics by the employment in the preparation of the poly(ethylene terephthalate), or analogous copolyesters containing sulfonated comonomers, of a titanium catalyst in combination with an acid phosphate additive which functions to eliminate or substantially reduce spinneret problems when the copolyester containing the catalyst and additive is melt spun. Examples include comonomers such as sulfonated isophthalic acid, $MgHTi(OC_4H_9)_6$ and ethyl acid phosphate whereby spinning at least 1,000 pounds of the molten basic-dyeable copolyester can be carried out for 40 to 100 or more hours without spinneret difficulties.

T893,014
BEARING INSERT RETAINING MEANS
Almond J. Gatzemeyer, 10423 N. Forrest Trail, Peoria, Ill. 61614, and George B. Grim, 710 Crestview Drive, Washington, Ill. 61571
Filed Mar. 16, 1971, Ser. No. 124,713
Int. Cl. F16c *9/00*
U.S. Cl. 308—237
1 Sheet Drawing. 5 Pages Specification



Bearing inserts for connecting rods and the like have a substantially semi-circular configuration and are adapted to be inserted in paired relationship within a connecting rod and cap bore with a radially loose or floating fit to allow radial self-adjustment of the bearing inserts for oil film clearance and resultant journal bearing effects.

The bearing inserts are restrained against axial movement out of the rod bore and against rotational movement, preventing loading of the bearing joints and backs, and allowing bearing designs oriented to load patterns, by means of restraining tabs extending radially outwardly into appropriate notches in the rod and cap bores.

The tabs are provided by segments of the ends of the bearing inserts which are bent outwardly from the surface of the bearing. The notches in the connecting rod and cap loosely receive the tabs and prevent them and the bearing inserts from moving axially or rotating.

REISSUES

DECEMBER 14, 1971

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

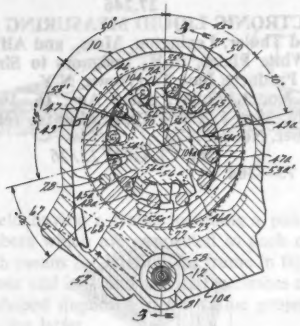
27,241
PORTING FOR BALANCED HYDRAULIC ROLLER PUMP

Carl A. Pace, Jr., and Christopher Nuss, Warren, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Original No. 3,374,749, dated Mar. 26, 1968, Ser. No. 606,934, Jan. 3, 1967. Application for reissue Feb. 24, 1970, Ser. No. 13,563

Int. Cl. F04c *1/00*

U.S. Cl. 418—225 22 Claims



Rollers carried within the circumferential notches in a pump rotor ride along an out-of-round cam surface to pump fluid from radially outer and inner inlet ports associated with inlet cam arcs of increasing radius) to radially outer and inner outlet ports associated with outlet cam arcs of decreasing radius. The outer inlet ports are restricted and open axially into radially outer portions of the notches subsequently to the axial opening of the inner inlet ports into the notches at locations radially inwardly of the rollers, the latter opening being subsequent to appreciable movement of the rollers along the inlet cam arcs, thereby to effect a gradual fluid pressure rise in the rotor notches and a radial pressure gradient enhancing roller stability within the inlet cam arcs. The inner outlet ports discharge high pressure fluid axially from the notches and are arranged to exert unbalanced fluid pressure force axially in one direction on the ends of the rollers as they move along approximately the trailing thirds of the outlet cam arcs, thereby to end load these rollers and enhance their stability.

27,242
FUEL ELEMENT

Louis J. Aerts, Hubert F. J. G. Bairiot, Mol, and Philippe L. Van Asbroeck, Brussels, Belgium, assignors to Societe Belge pour Industrie Nucleaire, S.A., and Centre d'Etude de l'Energie Nucleaire, both of Brussels, Belgium

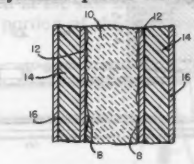
Original No. 3,488,827, dated Jan. 13, 1970, Ser. No. 620,489, Mar. 3, 1967. Application for reissue Aug. 10, 1970, Ser. No. 62,447.

Claims priority, application Belgium, Mar. 4, 1966, 24,811

Int. Cl. B23p *17/00, 9/00*

U.S. Cl. 29—400 8 Claims

This invention pertains to an improved method for manufacturing fuel elements for nuclear reactors by surrounding the fuel elements with an envelope of synthetic plastic material and thereafter applying deformation forces to the synthetic plastic envelope in order to decrease or completely remove any gaps existing between the nuclear fuel material and its surrounding casing.



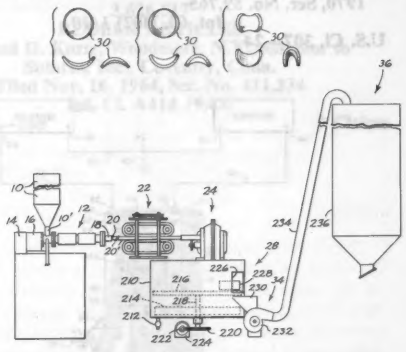
27,243
METHOD OF MANUFACTURING CELLULAR PACKING MATERIALS

James R. Sare, Richard L. Ropiequet, and Duncan C. Bergeron, by Alta Industries, Inc., Portland, Oreg., assignee

Original No. 3,400,037, dated Sept. 3, 1968, Ser. No. 411,033, Nov. 13, 1964. Application for reissue Jan. 12, 1970, Ser. No. 7,958.

Int. Cl. B29d *27/00*

U.S. Cl. 161—42 12 Claims



This invention relates to articles made of extrudable, expandable synthetic plastic material, and to the method and apparatus for producing such articles.

27,244
DEVICE FOR BUILDING UP HIGH PULSE LIQUID PRESSURES

Bogdan Vjacheslavovich Voitsekhovsky, Elmar Andreevich Antonov, Valentin Pavlovich Nickolaev, Grigory Yankelevich Shoikhet, Vladimir Mikhailovich Dudin, Alexandr Vasiljevich Shevchenko, and Nickolai Fedorovich Olenkov, Novosibirsk, U.S.S.R., assignors to Institute Gidrodinamiki Sibirskogo Otdelenia Akademi Nauk U.S.S.R., Novosibirsk, U.S.S.R.

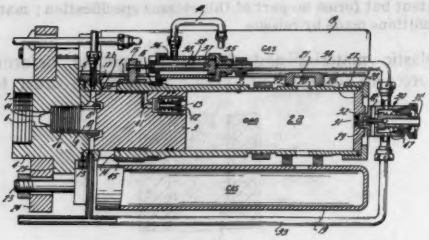
Original No. 3,412,554, dated Nov. 26, 1968, Ser. No. 453,424, May 5, 1965. Application for reissue Nov. 26, 1969, Ser. No. 888,174.

Int. Cl. F15b *7/00*

U.S. Cl. 60—54.5 HA 36 Claims

A device for building up liquid pressure pulses comprises a cylinder housing a piston, and at one side of the

piston, the cylinder's face is filled with compressed gas and serves as a low pressure chamber designed to accumulate energy from a forced stroke of the piston in the direction of the chamber. The space at the other side of the piston is filled with liquid and serves as a high pressure



chamber. High pressure in the chamber is built up as a result of impact of the piston on the liquid in this chamber upon reciprocation of the piston in the cylinder, the piston obtaining kinetic energy in the course of acceleration during expansion of the compressed gas.

27,245

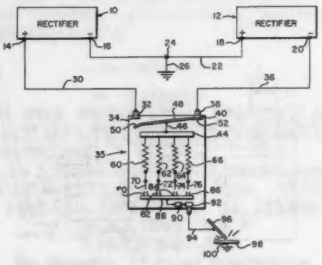
POLARITY REVERSIBLE CURRENT REGULATOR APPARATUS

David H. Buerkel, Bala Cynwyd, Pa., assignor to The Connecticut Development Credit Corporation, Meriden, Conn.

Original No. 3,452,211, dated June 24, 1969, Ser. No. 625,497, Mar. 23, 1967. Application for reissue July 30, 1970, Ser. No. 59,765

Int. Cl. H02j *1/10*

U.S. Cl. 307—24 **22 Claims**



A source of DC electric power comprises a pair of rectifier means each having a positive and negative output terminal, the positive output terminal of one of the rectifier means and the negative output terminal of the other of the rectifier means are connected to a common terminal which in turn is adapted to be connected to ground. One or more control means is provided, each control means including selectively adjustable resistance means for varying the current output thereof. Means in the form of a switch or the like is provided for selectively electrically connecting either the positive terminal of one rectifier means or the negative terminal of the other rectifier means to the input of the control means to thereby control the polarity of the output of the control means which is connected with suitable welding apparatus or the like. The apparatus is especially adapted for use in a multi-operator system wherein a plurality of control means are connected as described above in parallel with one another.

27,246

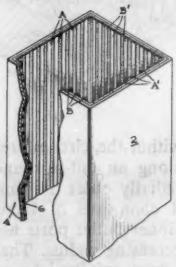
ELECTRONIC LIQUID MEASURING SYSTEM

Sherwood Thaler, Lexington, Mass., and Alfred D. Gronner, White Plains, N.Y., assignors to Simmonds Precision Products, Inc., Tarrytown, N.Y.

Original No. 3,377,861, dated Apr. 16, 1968, Ser. No. 453,716, May 6, 1965. Application for reissue Oct. 23, 1969, Ser. No. 869,976

Int. Cl. G01f *23/26*

U.S. Cl. 73—304 **5 Claims**



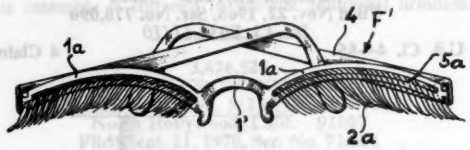
A fuel gauging system of the capacitance electrode type which enables the gauging of liquid in a container regardless of the position of the container with respect to a gravitational field. Each pair of opposing walls of the container is provided with a plurality of elongated capacitor plates, each of the plurality of plates being one of a pair, the other of the pair being located in the opposite wall of the opposing wall pairs. Each pair of plates is connected together and into a measuring circuit so that a reading of mass of fuel may be obtained and so that fringing effects are reduced.

PATENTS

GRANTED DECEMBER 14, 1971

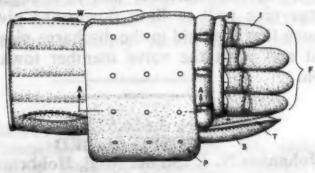
GENERAL AND MECHANICAL

3,626,514
EYESHIELD FITTED WITH EYELASHES OR THE LIKE
Pierino Sacco, Michelangelo Bovi Corso Vittorio Emanuele 74, Turin, Italy
Filed Sept. 25, 1969, Ser. No. 861,075
Claims priority, application Italy, Oct. 3, 1968, 53,349/68
Int. Cl. A61f *9/00*
U.S. Cl. 2—12 **7 Claims**



An eyeshield having a frame including a pair of bow-shaped members which are connected to each other and provided with means for holding the frame in front of the eyes of the user and in which artificial eyelashes connected to the bow-shaped members of the frame projecting forwardly from the latter.

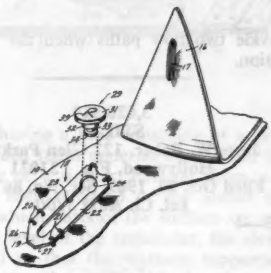
3,626,515
HOCKEY GLOVE
William Murray, Brantford, Ontario, Canada, assignor to A. G. Spalding & Bros. of Canada Limited, Brantford, Ontario, Canada
Filed Dec. 4, 1969, Ser. No. 882,119
Claims priority, application Canada, Aug. 26, 1967, 60,468
Int. Cl. A41d *13/10*
U.S. Cl. 2—16 **2 Claims**



A protector for the back of a hockey glove comprising a layer of relatively rigid and unbreakable material sandwiched between layers of shock absorbing material and formed over the back and around the side of the glove and perforations through the sandwich and glove to admit air to the glove interior.

3,626,516
COLLAR POINT HOLD DOWN AND TENSIONING DEVICE
George W. Ruane, 165 W. McMillan St., Cincinnati, Ohio 45219
Filed Nov. 12, 1969, Ser. No. 875,978
Int. Cl. A41b *3/00*
U.S. Cl. 2—132 **2 Claims**

A collar point hold down and tensioning device which includes a slideway attached to the body of a shirt and having an elongated slot therein and a button-member slideably received in the slot slideable along the slideway. When a button portion of the button-member is inserted



in a buttonhole of the collar point, tension in the collar point can be adjusted by moving the button-member along the slot.

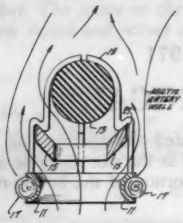
3,626,517
RUBBER ARTICLES
Leonard D. Kurtz, Woodmere, N.Y., assignor to Sutures, Inc., Coventry, Conn.
Filed Nov. 16, 1964, Ser. No. 411,334
Int. Cl. A41d *19/00*
U.S. Cl. 2—168 **3 Claims**

A surgeon's rubber glove having a continuous polytetrafluoroethylene coating over the entire inner, the entire outer or both surfaces.

3,626,518
ARTIFICIAL CARDIAC VALVE
Saul Leibinsohn, 11 Hagardom St., Rishon Lezion, Israel
Filed July 30, 1969, Ser. No. 845,981
Int. Cl. A61f *1/22*
U.S. Cl. 3—1 **10 Claims**

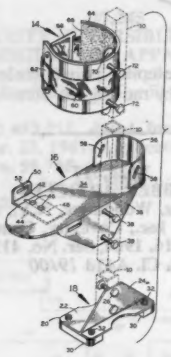
Characteristics of the ball valve and disc valve are employed to provide a cardiac valve of improved hydrodynamic design to assure more streamline blood flow and decreased turbulence. At the same time, the valve effects a reduction in volume as compared to ball valves heretofore used, but without lessening the amount of blood flow-

ing therethrough. An intermediate movable seating ring is located between the ball and stationary valve seat so



as to provide two flow paths when the valve is in the open position.

3,626,519
STILTS
Jesse W. Baker, 122 Glen Parkway, Hollywood, Fla. 33021
Filed Oct. 20, 1969, Ser. No. 867,624
Int. Cl. A61f *3/00*
U.S. Cl. 3—4 **3 Claims**



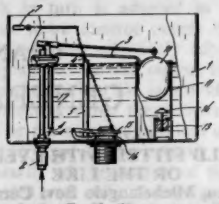
A stilt for a pair of stilts including a tubular post which is square or rectangular in section, a stirrup for the post in the form of an angle extrusion fastened to the post with bolts, a foot for the post in the form of a T-shaped extrusion secured to the bottom end of the post with bolts, and a legging secured to the upper end portion of the post with bolts. The bolts for the stirrup and the legging are movable to permit adjustment of the height of the stirrup and the leging. The stirrup also includes a cleat and a heel plate with straps over the same which encircle the foot of the user.

ERRATUM

For Class 4—213 see:
Patent No. 3,626,554

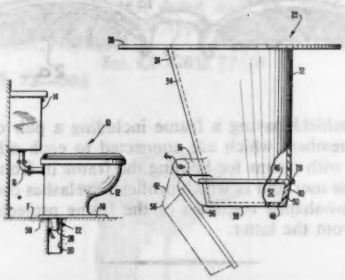
3,626,520
CONTROL TANK FOR A WATER CLOSET
Frank D. Biniores, 7817 Arch St., Little Rock, Ark. 72206
Continuation-in-part of application Ser. No. 885,554, Dec. 16, 1969. This application Mar. 26, 1970, Ser. No. 22,925
Int. Cl. E03d *1/36*
U.S. Cl. 4—41 **10 Claims**

Water closet supply tanks of the type embodying a float regulating the water supply, according as the level of water rises in said tank. Particularly, a control tank positioned within said tank, so as to encompass the float



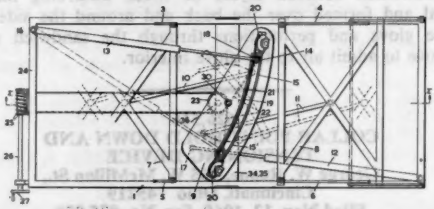
and ensure cutting off of the water supply, if the discharge valve remains open in the water tank.

3,626,521
WATER CLOSET VALVE
Ernest Delco, 2720 E. Michigan Blvd., Michigan City, Ind. 46360
Filed Nov. 22, 1968, Ser. No. 778,090
Int. Cl. E03d *11/10*
U.S. Cl. 4—85 **4 Claims**



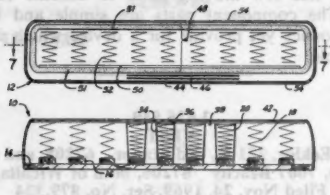
Disclosed is an inverted eccentric frusto-conically shaped sleeve mounting a flange about its upper end and extending within the discharge pipe of a water closet. A float member is pivotally mounted at the lower end of the sleeve for movement between a normally depending, valve open position and a fluid supported position seating against the lower end of the sleeve sealing the passage through the sleeve to preclude back-flow of fluid from the discharge pipe into the water closet. A bumper is provided on the float member and is engageable with the discharge pipe wall to limit downward pivotable movement such that the fluid in the discharge pipe always tends to float and pivot the valve member toward the closed position.

3,626,522
HOSPITAL BED
Johannes N. J. van der Meij, Hobbemalaan 7, Hilversum, Netherlands
Filed Sept. 22, 1969, Ser. No. 859,916
Int. Cl. A61g *7/00*
U.S. Cl. 5—63 **5 Claims**



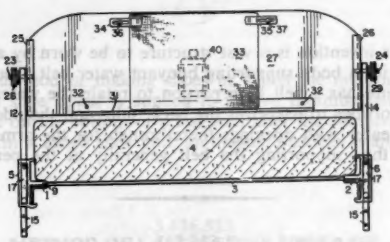
A pair of adjustable spring elements, having traveling means, are connected between a chassis and mattress support wherein said traveling means move in an arcuate path to raise or lower said mattress support.

3,626,523
BED FOUNDATION AND MATTRESS ASSEMBLY
Harry J. Robins, 5311 Blythwood, Houston, Tex. 77021
Filed Sept. 25, 1970, Ser. No. 75,562
Int. Cl. A47c *23/00, 25/00, 27/00*
U.S. Cl. 5—345 6 Claims



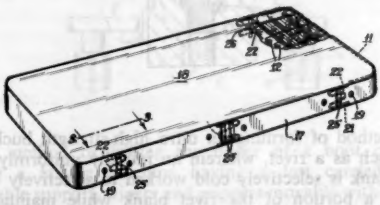
An improved bed foundation and mattress assembly which provides varying degrees of firmness for support and comfort of a human anatomy. The center section of the assembly is stiffened to provide additional firmness.

3,626,524
BED CROSS-BOARD
James W. Minton, 5125 Whitsett Ave., North Hollywood, Calif. 91607
Filed Sept. 21, 1970, Ser. No. 73,831
Int. Cl. A47c *21/00*
U.S. Cl. 5—327 6 Claims



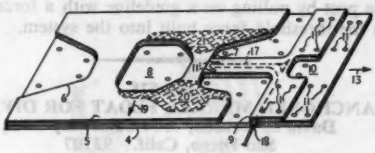
A cross-board for supporting and for providing certain treatments to the feet of invalids while in bed. The board may also be adjusted to a horizontal position to act as a table. A pair of compound angle brackets are selectably usable with bed rails of different sizes. The structure is proportioned to create an inward stress when fastened in position, thereby to simply secure the brackets upon the rails.

3,626,525
MATTRESS CONSTRUCTION
George S. Fasanella, Chicago Heights, Ill., assignor to The Columbia Bedding Company, Chicago, Ill.
Filed Feb. 5, 1970, Ser. No. 8,932
Int. Cl. A47c *23/00, 25/00*
U.S. Cl. 5—345 B 8 Claims



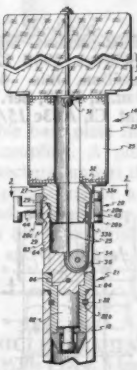
An innerspring mattress has a W-shaped handle support affixed to the innerspring unit at each of the handle locations. The central portion of the W is horizontal and is engaged by an inner fabric band attached to the exterior handle.

3,626,526
MATTRESSES
Edmond Pierre Robert Viel, Cite Industrielle, Ducos, Noumea, New Caledonia
Filed June 17, 1969, Ser. No. 833,996
Claims priority, application Australia, Feb. 17, 1969, 50,560/69
Int. Cl. A47c *23/00*; A61g *7/04*; A47g *9/00*
U.S. Cl. 5—345 6 Claims



A mattress having a base consisting of a layer of soft resilient expanded foam material over which is arranged a further layer of a similar material, from which layer portions have been removed or are absent to produce a mattress in which parts of the surface are at an elevation above the level of the remainder, the elevated parts being arranged so that the mattress supports the body of the user when either in the dorsal or lateral positions in an anatomically advantageous manner. Absent portions of the overlying layer may be filled with material of greater softness and resilience than the remainder of the layer. Portions removed from the absent portions of the overlying layer may be attached to the elevated parts to increase the difference in elevation between the different parts of the mattress.

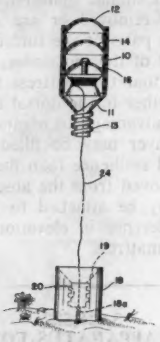
3,626,527
METHOD AND APPARATUS FOR INSTALLING GUIDELINES AT UNDERWATER WELLHEADS
Walter Brown, Long Beach, Calif., assignor to North American Rockwell Corporation
Filed June 5, 1970, Ser. No. 29,206
Int. Cl. B63b *21/52*
U.S. Cl. 9—8 8 Claims



There is provided a simple, reliable and compact member having a plug-in portion that plugs into an underwater guide post, and, releasably fixed to an upper part thereof, there is a coil of relatively light line enclosed within a can. One end of the line is connected directly to a buoy and the other end is also connected to the

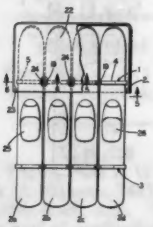
same buoy after the end passes through a pulley mounted onto the plug-in portion. The compact member is adapted to be plugged into the guide post by a submarine that afterwards releases the buoy and coil of line from the plug-in portion. On the surface, a working guideline is fixed to one end of the light line and the guideline is pulled and secured to the plug-in portion by pulling on the other end of the light line. Means are incorporated in the plug-in portion to allow it to be released from the guide post by pulling on a guideline with a force greater than the threshold force built into the system.

3,626,528
ANCHORED MARKER FLOAT FOR DIVERS
David L. Jackson, 4504 Cape May Ave., San Diego, Calif. 92107
Filed May 11, 1970, Ser. No. 36,016
Int. Cl. B63b *21/52*
U.S. Cl. 9—9 **3 Claims**



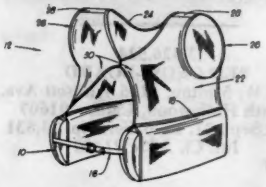
A plastic float carries a spinning reel and is detachably connected to a leaded weight. When a diver wishes to mark a spot he loosens and drops a weight and lets the float rise. Line on a reel in the float plays out permitting the float to rise to the surface.

3,626,529
WATER SKIING DEVICE
James H. Schreck, 2908 12th St. NW., Massillon, Ohio 44646
Filed Jan. 2, 1970, Ser. No. 120
Int. Cl. A63c *15/00*
U.S. Cl. 9—310 A **9 Claims**



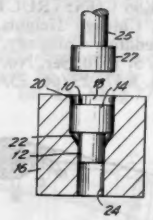
A water skiing device having retaining members for holding two or four water skis in a rigid parallel position. The device is readily attachable and detachable from the skis without the use of any tools or equipment and is attached in such a manner so as not to mar, permanently mark or damage the skis being used. The device is adjustable to permit skis of various sizes to be utilized and is suitable for use on skis of different material. The device is free of sharp or dangerous projections and has few moving parts to become rusted or broken. The component parts are simple and inexpensive to produce yet provide for a device which is sturdy and durable.

3,626,530
VEST
Laura C. Ecklor, 251 N. Old Manor 67208, and Suzanne E. Smith, 7007 Beachy 67206, both of Wichita, Kans.
Filed Nov. 24, 1969, Ser. No. 879,324
Int. Cl. B63c *9/10*
U.S. Cl. 9—342 **2 Claims**



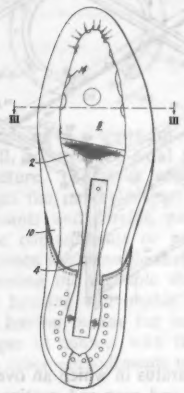
This invention is a vest structure to be worn by a person with a body supporting buoyant water belt. The vest structure has a belt loop portion to retain the water belt and portions to pass over the back, sides and shoulders of the wearer with openings therethrough for the arms and neck thus supporting the belt generally at the person's waist.

3,626,531
METHOD FOR FORMING ULTRA HIGH-STRENGTH BUCKABLE RIVETS
Marshall R. Mazer, Philadelphia, and Raymond Ollis, Jr., Oreland, Pa., assignors to Standard Pressed Steel Co., Jenkintown, Pa.
Filed May 29, 1969, Ser. No. 828,956
Int. Cl. B21k *1/58;* **B23g** *9/00*
U.S. Cl. 10—27 **7 Claims**



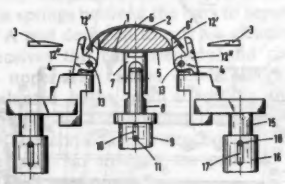
A method of forming an ultra high-strength buckable bolt, such as a rivet, wherein an initially uniformly soft rivet blank is selectively cold worked to selectively work harden a portion of the rivet blank while maintaining another portion of the blank in the initially soft condition. After heat treating, the blank is machined to the final rivet shape with the softer portion being retained as the rivet tail so that it can be readily upset, as by bucking or squeezing, without cracking when the rivet is installed.

3,626,532
SHOEMAKING METHODS
Frank R. Smith, Leicester, England, assignor to USM Corporation, Boston, Mass.
Filed Aug. 31, 1970, Ser. No. 68,250
Claims priority, application Great Britain, Sept. 5, 1969, 44,053/69
Int. Cl. A43d *21/00*
U.S. Cl. 12—142 F 4 Claims



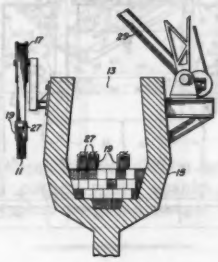
A method of making shoes in which the margin of a lasted shoe upper is applied to molten thermoplastic adhesive on the bottom of a last and, after the adhesive sets to form a lasted shoe unit, an outsole member is applied.

3,626,533
METHOD OF LASTING THE UPPER OF FOOTWEAR
Henry von den Benken, West Roxbury, Mass., and Herbert Klantke, Lemberg, Germany, assignors to Firma Eugen G. Henkel Maschinenfabrik, Neu-Isenburg, Germany, and Compo Industries, Inc., Waltham, Mass., fractional part interest to each
Filed Jan. 7, 1970, Ser. No. 1,132
Claims priority, application Germany, Jan. 9, 1969, P 19 00 843.6
Int. Cl. A43d *21/00*
U.S. Cl. 12—145 4 Claims



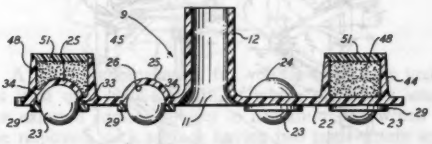
A method of lasting the upper of a boot or shoe using a lasting machine having a last carried by a movable support, wipers and grippers movable with respect to the last. The bottom surface of the last is initially arranged below the plane of movement of the wipers and the grippers above this plane. The last support and grippers are moved in opposite directions simultaneously to bring the bottom surface of the last into said plane, and the wipers are moved to engage the leather.

3,626,534
METHOD OF ERECTING PARALLEL WIRE STRANDS IN BRIDGE SADDLES
Joseph R. Bell, Warwick, R.I., and John E. Windsor, Bristol, Md., assignors to Bethlehem Steel Corporation
Filed Apr. 16, 1969, Ser. No. 864,231
(Filed under Rule 47(a) and 35 U.S.C. 116)
Int. Cl. E01d *11/00*
U.S. Cl. 14—22 3 Claims



Parallel wire strands are positioned in a bridge saddle by compacting the strands into a rectangular cross section and applying U-shaped forms to the strand at spaced locations along the portion of the strand which is to be supported in the saddle. The shaped strands are then placed side by side in the saddle in layers and as each layer is completed the U-shaped forms are removed.

3,626,535
SPHERE-SUPPORTED POOL SUCTION HEAD
William D. Bond, Arcadia, Calif., assignor to World Industries, Inc., Azusa, Calif.
Filed Dec. 8, 1969, Ser. No. 883,092
Int. Cl. E04h *3/20*
U.S. Cl. 15—1.7 10 Claims

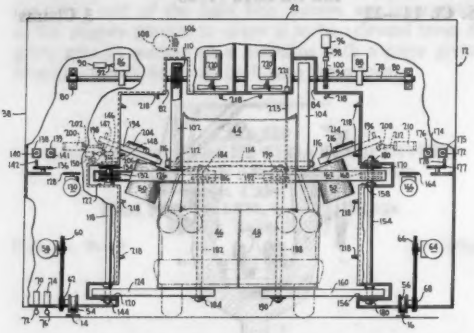


A rectangular flexible base plate has a handle bracket and a suction hose coupling. A plurality of rotatable spheres in base plate sockets support the base plate above the pool floor. The spheres are of a heavy material to weight the suction head. Alternatively, hollow boxes atop the base plate contain heavy material to weight the suction head. The sockets and boxes have walls which rigidify the base plate.

3,626,536
AUTOMATIC VEHICLE WASHING APPARATUS
Angelo Napoli, 1609 Wills Place, Vineland, N.J. 08360
Filed Dec. 19, 1968, Ser. No. 785,155
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 E 2 Claims

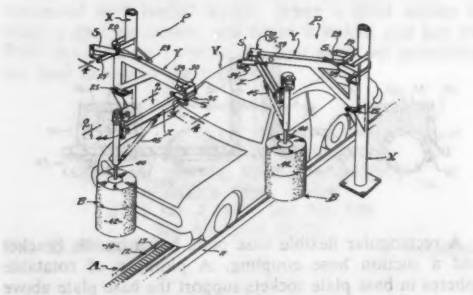
Apparatus for automatically washing vehicles including a frame movable along a pair of tracks to pass by a vehicle to be washed, a pair of side brushes supported by the frame, a top brush supported by the frame, a pair of window brushes supported by the frame, a plurality of nozzles on the frame for spraying liquid on the vehicle

and brushes and system control circuitry for moving the frame past the vehicle four times including a first cycle in which the vehicle is washed by the top brush and side brushes, a second cycle in which the vehicle is washed



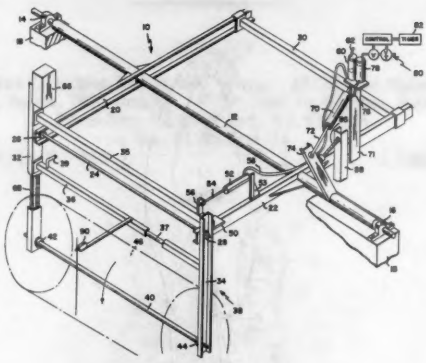
by the side brushes and the windows of the vehicle are washed by the window brushes, a third cycle in which the vehicle is rinsed and waxed, and a fourth cycle in which the vehicle is dried by blowers.

3,626,537
GRAVITY OPERATED CAR WASH WITH RELEASABLE BRUSH MEANS
Earl E. Wilson, 1328 Newport Ave., Long Beach, Calif. 90804
Filed Jan. 31, 1969, Ser. No. 795,615
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 D **20 Claims**



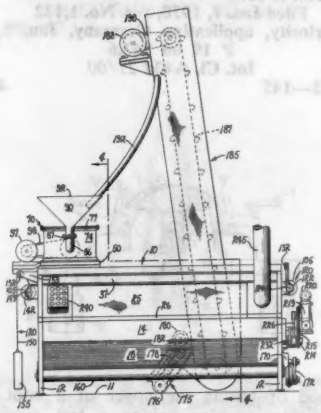
This invention relates to automobile washing wherein brushing units traverse the substantially vertically disposed planar surfaces of the vehicle body and particularly the front, both sides and the back surfaces, and wherein the units carrying the brushing apparatus are characterized by articulated inner and outer arms supported from a stationary standard and carrying powered brush means that engages the surfaces being washed so as to articulate the apparatus into movement over said surfaces. In accordance with this invention releasable brush means is biased toward engagement with the said surfaces by gravitational forces. To these ends, the said inner and outer arms and said releasable brush means are each pivotally mounted, one upon the next, and the mounting axes thereof so disposed as to create swinging action of the brush means into releasable yielding pressured engagement against the automobile body surfaces.

3,626,538
CAR WASH APPARATUS
Kurt P. Scheuermann, 211 Eastbourne Terrace, Moorestown, N.J. 08057
Filed Sept. 8, 1970, Ser. No. 70,150
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 D **10 Claims**



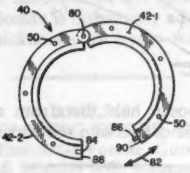
Car wash apparatus in which an overhead brush which washes the roof and rear end portion of the car is supported to permit the brush to move in the direction of the car as the brush moves into contact with the rear portion of the car moving past the apparatus.

3,626,539
SHOT PEENING MACHINE
Rutter W. Armey, 5505 E. Liberty Ave., Fresno, Calif. 93727
Filed June 1, 1970, Ser. No. 42,193
Int. Cl. B24c *3/10*
U.S. Cl. 15—95 **9 Claims**



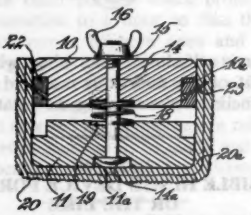
A shot peening machine providing a housing circumscribing a peening chamber having means for supporting a workpiece within the chamber and shot discharge means movably mounted on the housing for reciprocal movement along a substantially rectilinear path to discharge shot into the chamber against the workpiece.

3,626,540
SHAFT WIPER
Robert M. Rood, 3225 Victoria Road, St. Paul, Minn. 55119
Original application Aug. 21, 1968, Ser. No. 754,248, now Patent No. 3,570,037, dated Mar. 16, 1971. Divided and this application June 8, 1970, Ser. No. 44,208
Int. Cl. F16c *33/20*
U.S. Cl. 15—210 10 Claims



This invention relates to a wiper for use with a moveable shaft, or quill, adapted for axial movement within a supporting structure. The shaft wiper slideably surrounds and engages the movable shaft in a manner to wipe all contaminants and foreign particles therefrom for preventing the contaminants or particles from becoming lodged between the movable shaft and the mounting, thereby preventing the movable shaft from becoming lodged in the housing and unable to be moved. A circular structure having means for holding at least a portion of the wiper in contact with the movable shaft is shown. Various other embodiments of the shaft wiper are also shown.

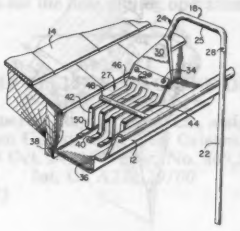
3,626,541
FLOOR CLEANING AND WAXING IMPLEMENTS
William A. Boettcher, 4507 N. Clark St., Chicago, Ill. 60640
Filed Oct. 29, 1969, Ser. No. 872,064
Int. Cl. A47l *13/46*
U.S. Cl. 15—233 4 Claims



An implement carried at the lower end of a stick for cleaning or waxing floors. The implement is a headpiece having upper and lower cross-bars held together by bolts directed upwardly from the lower bar through the upper one to receive wing nuts; and the upper bar is urged by compression springs between the bars to separate from the lower one. A pad designed to carry a cleaning or waxing solution receives the bar assembly and rises along its sides. The upper bar carries outwardly projecting and upwardly slanted barbs; and advancing the wing nuts lowers the upper bar for impaling the sides of the pad on the barbs. The consequent retraction of the wing nuts causes the upper bar to draw the pad into taut engagement with the lower one.

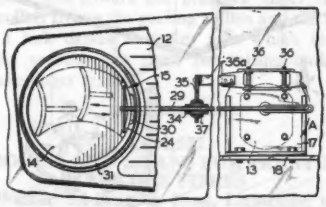
3,626,542
GUTTER CLEANING TOOL
William S. Despain, 1725 Darrel Drive, Titusville, Fla. 32780, and James E. Blevins, 1948 Barkley Ave., Eau Gallie, Fla. 32935
Filed Feb. 25, 1970, Ser. No. 14,030
Int. Cl. E04d *13/06*
U.S. Cl. 15—236 8 Claims

An implement is disclosed for cleaning leaves and other debris from elevated house gutters, including a tool portion comprising a plurality of substantially parallel horizontal tines and an elongated, substantially vertical handle portion secured thereto to permit manipulation of the tool portion by a person standing on the ground.



In its preferred form, the tool portion includes a step-like vertically offset portion which enables the tines to fit underneath a typical overhead hanger bracket for the gutter.

3,626,543
WIPING ARRANGEMENT FOR VEHICLE HEADLIGHTS
Willi Schaper, Buhl, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany
Filed Dec. 15, 1969, Ser. No. 889,848
Claims priority, application Germany, Dec. 17, 1968, P 18 15 098.6
Int. Cl. B60s *1/32, 1/36*
U.S. Cl. 15—250.21 12 Claims

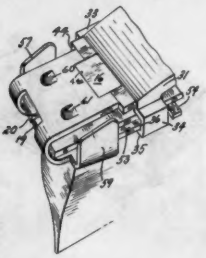


A wiping arrangement for vehicle headlights includes at least one vehicle headlight whose protective lens has an exposed surface subject to contamination which is to be removed, such surface having two transversely spaced edges. A wiper member is located on this surface in contact therewith. Means is provided for reciprocating the wiper member in wiping contact with the surface in a first path from one towards the other of the edges, and thereupon in a second path different from the first path from the other towards the one of the edges.

3,626,544
CLIP FOR WINDSHIELD WIPER BLADE REFILL
Manuel Lopez, Trumbull, and Thomas J. Chiaramonte, Shelton, Conn., assignors to The Roberk Company, Shelton, Conn.
Filed Sept. 16, 1970, Ser. No. 72,567
Int. Cl. B60s *1/02*
U.S. Cl. 15—250.42 4 Claims

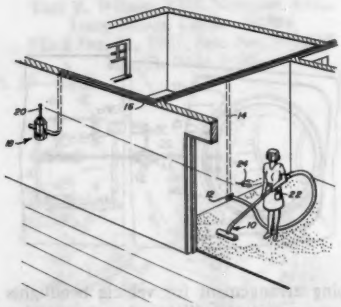
A clip structure for use with a windshield wiper blade refill comprising a main body member and a pair of resilient legs interconnected thereto by a corresponding pair of bent resilient parts, whereby said legs may be disposed parallel and beneath said main body member; said main body member defining a free laterally extending edge, said legs being resiliently compressible to-

ward each other, and having laterally outwardly extending terminal lugs thereon, said lugs and said edge defining an interstice on either side of said clip, the width



of which is resiliently adjustable within small limits upon engagement with a corresponding claw on a pressure distributing means forming part of a wiper blade.

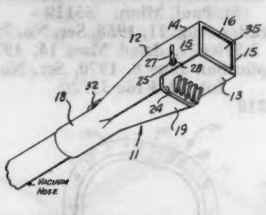
3,626,545
CENTRAL VACUUM CLEANER WITH REMOTE CONTROL
Perry W. Sparrow, Pine Bluff, Ark.
(3822 W. 27th, Little Rock, Ark. 72204)
Filed Oct. 9, 1969, Ser. No. 865,063
Int. Cl. A47l *5/38*
U.S. Cl. 15—314 **3 Claims**



A vacuum cleaner hose to be selectively connected to separately located outlets connected in parallel by conduits to a dust collection container. A blower is mounted in the container for creating a vacuum which is distributed along the conduit and the hose so that cleaner action can be effected at the outer hose end. The blower in the collection container is motor driven and a radio controlled switch causes the motor to be turned on and off from a remote location, where the operator is located. The operator carries a small radio transmitter for transmitting a command signal to a receiver located in the compartment and the receiver causes actuation of the radio controlled switch.

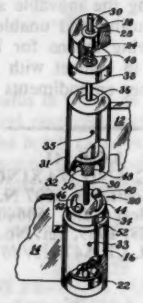
3,626,546
ATTACHMENT FOR A VACUUM CLEANER TO COMB THE HAIR OF PETS
Arthur L. Dove, 464 Watchung Ave., Watchung, N.J. 07060
Filed Feb. 13, 1970, Ser. No. 11,139
Int. Cl. A01k *13/00*
U.S. Cl. 15—402 **9 Claims**

A combined comb and vacuum handpiece for combing the hair of animals. The comb portion has a set of teeth located adjacent the intake orifice of the vacuum handpiece portion and has a cam mechanism for raising the



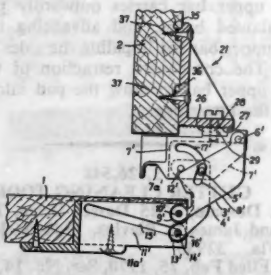
comb teeth to loosen hair therefrom and to allow the loosened hair to be drawn into the vacuum intake orifice.

3,626,547
DOOR HINGE
Herbert S. Werner, Hollywood, Fla., assignor to Auto Comp Devices, Inc., Huntington, N.Y.
Filed Oct. 2, 1969, Ser. No. 863,084
Int. Cl. E05f *1/06*
U.S. Cl. 16—154 **5 Claims**



An automatic self-closing door hinge which is actuated by the weight of the door it is mounted on. The hinge utilizes an inclined plane riding on rotatable members.

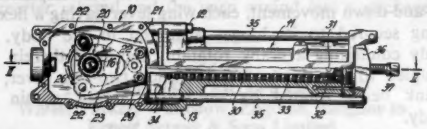
3,626,548
INVISIBLE HINGE DEVICE FOR DOORS OR THE LIKE
Hellmuth Grunert, Hoffnungstal, Germany, assignor to Prameta Prazisionsmetall- und Kunststofferzeugnisse G. Baumann & Co., Cologne-Ostheim, Germany
Filed June 18, 1969, Ser. No. 834,290
Claims priority, application Germany, June 22, 1968, P 17 59 939.2
Int. Cl. E05d *3/06, 7/04*
U.S. Cl. 16—166 **4 Claims**



This disclosure provides an invisible hinge device for mounting at least one door leaf at an end face of a frame wall member. A first hinge member is mounted on the

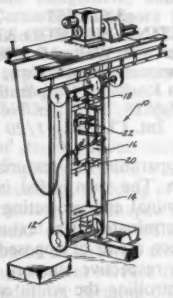
door leaf and a second hinge member is mounted on the frame wall member. A lever member and a link member are attached at each end thereof to a respective hinge member. The lever member and link member are pivotally connected about a common pin member to effect a tongs-like movement with respect to each other when the door leaf is deflected from a closed position. The link and lever members include angled end portions attached to the hinge member mounted on the door leaf. The hinge device of this disclosure is universally adaptable to articles having various thicknesses of frame wall members and door leaves.

3,626,549
DEVICE FOR CLOSING DOORS AND THE LIKE
Dietrich Jentsch, Ennepetal-Voerde, Germany, assignor to Firma Dorken & Mankel KG, Ennepetal-Voerde, Germany
Filed Aug. 15, 1969, Ser. No. 850,378
Claims priority, application Germany, Aug. 17, 1968, P 17 84 547.5
Int. Cl. E05f *3/10, 3/00*
U.S. Cl. 16—53 **8 Claims**



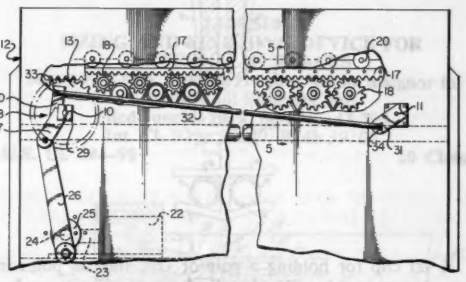
A door closer has an elongated housing in which there is arranged a slide movable longitudinally between a rest position and a working position. The slide has at least one aperture extending transversely of but elongated in the direction of movement, and the aperture is bounded at opposite sides by edge faces which extend in this direction. Biasing means permanently urges the slide to its rest position. A fixedly positioned turnably mounted shaft has an inner portion extending through the aperture in the slide and an outer portion which projects from the housing for connection to a door so that the shaft will turn as the door moves between open and closed positions. Connecting means connects the shaft with the slide so that the latter is moved from its rest position when the shaft turns. A roller ring is mounted on the inner portion of the shaft and received in the aperture in rolling engagement with the edge faces so as to guide and support the shaft in the aperture with minimum friction.

3,626,550
ELECTRICAL SHOCKING DEVICE FOR A HIDE PULLER APPARATUS
John G. Troy, 8401 W. Dodge Road, Suite 111, Omaha, Nebr. 68102
Filed July 30, 1970, Ser. No. 65,292
Int. Cl. A22b *5/16*
U.S. Cl. 17—21 **4 Claims**



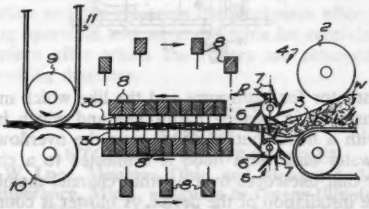
An electrical shocking device for use with a hide puller apparatus comprising a support means mounted on the frame of the hide puller apparatus and having a power cylinder means mounted thereon with a movable cylinder rod extending therefrom. An electrode means is mounted on the outer end of the extendible rod and may be selectively moved into contact with the spine of the carcass suspended adjacent the hide puller apparatus to stiffen or firm the carcass for the hide pulling operation.

3,626,551
SHRIMP PEELING MACHINE DRIVE MECHANISM
James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.
Filed Oct. 24, 1969, Ser. No. 869,285
Int. Cl. A22c *29/00*
U.S. Cl. 17—73 **2 Claims**



This disclosure is directed to driving the peeling rollers of a shrimp peeling machine and the pressure finger frames mounted thereover by a pitman arm actuated bell crank which rocks on cam shaft of a pair of cam shafts which raises and lowers the pressure finger frame and simultaneously drives the peeling rollers and the bell crank through a link drives a rocker arm which in turn oscillates the second cam shaft for raising and lowering the pressure finger frames.

3,626,552
PROCESS AND MEANS FOR TREATING TEXTILE FIBRES
Donald Walker, 58 Bramley Lane, Lightcliffe, near Halifax, England, and Michael John Walker, 36 Florence Ave., Wilsden, near Bradford, England
Continuation-in-part of application Ser. No. 660,785, Aug. 15, 1967. This application Nov. 17, 1969, Ser. No. 877,198
Claims priority, application Great Britain, Aug. 22, 1966, 33,172/66
Int. Cl. D10g *19/06*
U.S. Cl. 19—129 **3 Claims**



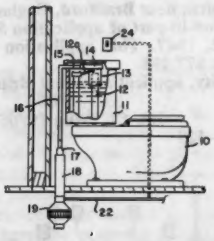
Apparatus for treating a random mass of wool or other textile fibres to convert them into a lap or sliver having the fibres in substantially parallel formation, wherein the random mass of fibres is supplied between a pair of pinned feed rollers whose pins co-operate to effect a restraining but non-positive grip on the material whilst it is drawn from the pins of the rollers by faller gills moving at a

speed at least three times as fast as that at which the fibres are forwarded by said rollers to straighten the fibres in the space between the rollers and the nearest faller gills, which space is not greater than the mean fibre length of the material being treated, the fibres then being drawn off the faller gills by delivery rollers.

3,626,553
SKI CLIP
Robert J. Darney, 125 W. Keith Road, and Douglas W. Goodbrand, 1341 W. 22nd St., both of North Vancouver, British Columbia, Canada
Filed Aug. 6, 1970, Ser. No. 61,588
Int. Cl. A44b *21/00*; A63c *11/02*
U.S. Cl. 24—81 SK **5 Claims**

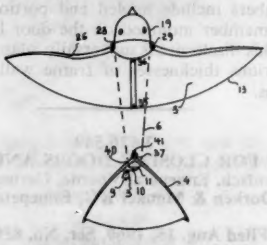
A ski clip for holding a pair of skis and ski poles in a neat, compact bundle, the clip having spring arms between which the skis are clamped and a shaft extending between the skis having an abutment member at a free end for holding the skis within the arms and against a base of the ski clip. Spring clips extending from the base receive and hold ski poles in spaced, parallel relationship to the skis.

3,626,554
VENTILATOR FOR BATHROOMS
William L. Martz, 15875 Woodacre Road, Los Gatos, Calif. 95030
Filed Dec. 8, 1969, Ser. No. 882,815
Int. Cl. E03d *9/04*
U.S. Cl. 4—213 **3 Claims**



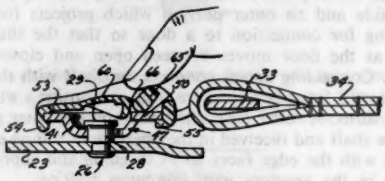
A ventilator for bathrooms and the like which may be easily installed in existing bathrooms and which is provided with a hood that is placed over the overflow pipe in the water tank. This hood is connected to a channel member that telescopes over another channel member to facilitate installation of the device. A blower is connected to the channel members and one embodiment of the device provides a filter of activated charcoal connected to the channel just ahead of the blower. Another embodiment of this device employs a check valve provided in the ventilating pipe of a toilet bowl which is equipped with a flush type valve. The check valve functions to prevent water from entering the ventilating duct during flushing of the toilet.

3,626,555
FLYING TOY
Prosper Albertini and Gerard de Ruymbecke, both of 30 Boulevard Chancel, Marseille, France
Filed Dec. 1, 1969, Ser. No. 881,194
Int. Cl. A63h *27/00*
U.S. Cl. 46—74 R **1 Claim**



A flying bird toy has an elongated body on which a pair of two-arm wing levers are pivoted for reciprocating up-and-down movement, each wing lever having a flexible wing secured to its longer arm and to the body, the body containing a crank rotatably mounted therein and coupled to the shorter arm of each two-arm lever, the crank being rotated by an elastic motor within the body.

3,626,556
BUCKLE MECHANISM
Joseph W. Struck, East Detroit, Mich., assignor to Irvin Industries Inc., Lexington, Ky.
Filed Nov. 10, 1970, Ser. No. 88,303
Int. Cl. A44b *11/25, 17/00*
U.S. Cl. 24—203 **10 Claims**

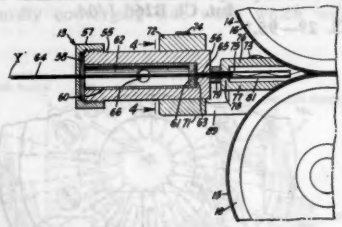


A coupling for a safety seat belt system including at least first and second buckle members, one buckle members, one buckle member including connector means and the other buckle member including a pocket portion for receiving said connector means and latch means for releasable retention of the connector means of one buckle member in the pocket portion of the other.

3,626,557
YARN TEXTURIZING METHOD AND APPARATUS
Ashvin J. Chudgar and Walter R. Dunn, Reading, and Vincent A. Iannucci, West Lawn, Pa., assignors to North American Rockwell Corporation, Pittsburgh, Pa.
Filed May 18, 1970, Ser. No. 37,995
Int. Cl. D02g *1/20*
U.S. Cl. 28—1.3 **13 Claims**

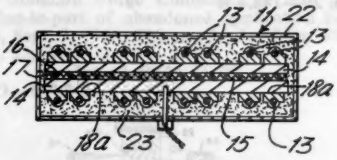
Method and apparatus for texturizing multi-filament thermoplastic yarn. The yarn is fed into a yarn delivery tube having a terminal end projecting into a larger tube. The larger tube terminates at a texturizing zone defined by the bight between a pair of opposed mesh belts as they pass around their respective support rollers and by adjustable plates controlling the width of the zone. Air under pressure and with a swirling motion imparted thereto is fed into the larger tube, the air flowing therethrough to

the texturizing zone and drawing the yarn therewith and causing the yarn to twist as it leaves the yarn delivery tube. As the yarn reaches the texturizing zone the swirling current of air causes the yarn to form spirals which are confined in overlapping compacted relationship as



they enter the bight between the belts. During the passage of the yarn between the belts it is subjected to heating and thereafter to cooling. After the yarn leaves the belts it is tensioned to bulk the yarn and the tension is thereafter relaxed and the yarn wound into a package.

3,626,558
TEXTILE HEATER APPARATUS
Walter Parker, Wilmslow, England, assignor to Ernest Scragg & Sons Limited
Filed Dec. 31, 1969, Ser. No. 889,588
Claims priority, application Great Britain, Jan. 11, 1969, 1,761/69
Int. Cl. D02j *13/00;* **F26b** *23/06;* **H05b** *3/06*
U.S. Cl. 28—62 **10 Claims**



A yarn heater for heating a plurality of yarns in a multistation yarn processing machine has a single heating unit sandwiched in heat-conducting relationship between two thermally conductive plates, each of which is provided at its side facing away from the heating unit with heater tubes through which the yarn is to pass. These heater tubes may extend in parallelism or at an angle of inclination to an edge of the respectively associated plate.

3,626,559
PROCESS OF SHAPING METAL SURFACES AND CLEANING THE SAME
Christian Rossmann, Langenfeld, and Irmgard Dunnewald, Neuss, Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany
No Drawing. Filed Mar. 4, 1970, Ser. No. 16,597
Claims priority, application Germany, Mar. 20, 1969, P 19 14 193.6
Int. Cl. B23p *17/00;* **C23g** *1/00*
U.S. Cl. 29—1 **4 Claims**

In the process of shaping metal surfaces and cleaning the same which comprises shaping a hard metal surface in the presence of a cutting, grinding or forming oil based on mineral oil, subjecting said shaped metal surface having a residue of said cutting, grinding or forming oil thereon to the action of an aqueous cleaning solution and recovering said shaped metal surface free of said residue of said cutting, grinding or forming oil, the improvement which comprises (A) admixing said cutting, grinding or forming oil based on mineral oil, prior to said shaping step, with from 3% to 50% by weight of an oil-soluble, nonionic emulsifier selected from the group consisting of:

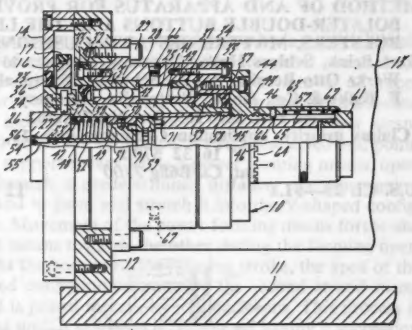
(a) Addition products of 2 to 5 mols of ethylene oxide to 1 mol of a fatty compound having a replaceable hydrogen atom and 12 to 18 carbon atoms selected from the group consisting of fatty acids, fatty amines and fatty alcohols,

(b) Addition products of 5 to 6 mols of ethylene oxide to 1 mol of dodecylphenol,

(c) Partial esters of sorbitol with fatty acids having 12 to 18 carbon atoms in a ratio of 1.5 to 3 mols of fatty acid to 1 mol of sorbitol, and

(d) Mixtures thereof; and (B) utilizing as said aqueous cleaning solution, an aqueous composition containing from 0.05% to 0.5% of an anionic wetting agent and from 0.05% to 0.5% of said oil-soluble, nonionic emulsifier.

3,626,560
SIZING AND FINISHING DEVICE FOR EXTERNAL SURFACES
Stuart E. Kalen, Sterling Heights, Mich., assignor to Cogsdill Tool Products, Inc.
Filed June 4, 1970, Ser. No. 43,390
Int. Cl. B21c *37/30;* **B24b** *39/00*
U.S. Cl. 29—90 **10 Claims**

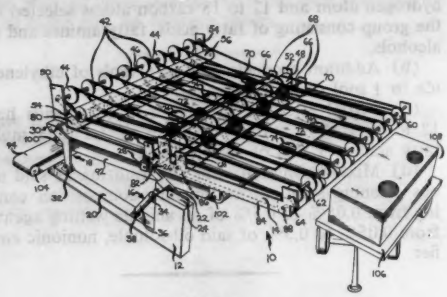


The self-contained device produces relative rotation between a workpiece, truncated conical rollers and a head having a truncated conical surface. The rollers are adjustable to fall on a desired diameter for sizing and/or finishing the external surface of a cylindrical workpiece by a burnishing operation. By tilting the rollers relative to the axis of the tool, a feed occurs which advances the workpiece through the burnishing rollers. Manual or power operated members adjust the roller carrier and head relative to each other lengthwise of the tool for positioning the rollers for the sizing and/or finishing operation and for releasing the workpiece after the burnishing operation and when desirable for receiving a new workpiece after which the rollers are returned to the set working diameter.

3,626,561
AUTOMATIC SHEET STACKER
John W. Luce, Maumee, Ohio, and Richard A. Morrette, Temperance, Mich., assignors to Owens-Illinois, Inc.
Filed Dec. 15, 1969, Ser. No. 885,144
Int. Cl. B24b *39/00*
U.S. Cl. 29—90.5 **6 Claims**

An improved automatic sheet stacker for conveying individual sheets in precise alignment, removing scrap materials from the sheets as they are being conveyed, and depositing the sheets in a uniform stack at a collection point. This stacker features four sets of revolving conveyor belts, two upper sets and two lower sets, between which the

individual sheets are securely held and conveyed in precise alignment. Also provided by this improved stacker are a plurality of revolving brushes, which are positioned to remove scrap material from the sheets being conveyed, and a conveyor system to collect and transport away the scrap particles removed by the revolving brushes.

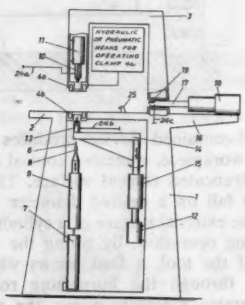


3,626,562

METHOD OF AND APPARATUS FOR PROVIDING BOLSTER-DOUBLE BUTTONS AND THE LIKE IN BOLSTERS, MATTRESSES AND CUSHIONS

Karl Brink, Schloss Holte, Germany, assignor to Astor-Werke Otto Berning & Co., Schwelm, Westphalia, and F. Balke & Co., Holte, Westphalia, Germany

Filed Feb. 10, 1969, Ser. No. 797,762
Claims priority, application Germany, Feb. 10, 1968, P 16 32 570.5
Int. Cl. B68g *7/00*
U.S. Cl. 29—91.1 **12 Claims**



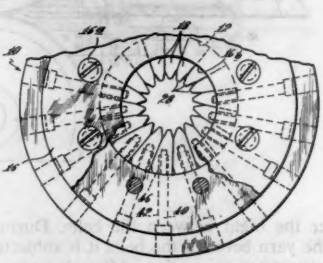
A method of and an apparatus for applying two-part double bolster buttons of synthetic material connected together by a stay-part, and two-part hollow rivets or the like equipped with bolster buttons and serving as a stay-part in bolsters, mattresses, cushions and the like, which comprises the steps of strongly compressing and rigidly clamping a bolster about the position of a double bolster button, and punching the bolster at the point of the bolster button to be inserted. A small tube slides over the shaft of a mandrel behind cutting edges of the mandrel and the latter is withdrawn through the small tube and the mandrel and is removed from the bolster. A stay-part of one portion of the double bolster button or of a hollow rivet is inserted into the small tube on the side remote from the mandrel. The small tube is then withdrawn and the other portion of the double bolster button or the rivet equipped with a bolster button slides and is secured onto the first portion of the bolster button already in the bolster, and the clamping of the bolster is released.

3,626,563

POT BROACH

Reino G. Lehto, Maynard, and Robert L. Schneider, Hudson, Mass., assignors to The Lapointe Machine Tool Company, Hudson, Mass.

Filed Jan. 2, 1970, Ser. No. 223
Int. Cl. B26d *1/04*
U.S. Cl. 29—95.1 **9 Claims**



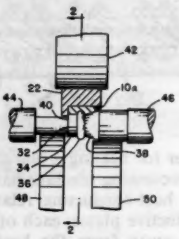
A tool comprising a plurality of broach bars having teeth along one edge and a holder supporting the bars with the toothed edges at equal radial distances from a common axis so that the toothed edges collectively form an internal broach.

3,626,564

MANUFACTURE OF BEARING RACES

David W. Daniel, Birmingham, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Feb. 26, 1970, Ser. No. 14,483
Int. Cl. B21h *1/12*
U.S. Cl. 29—148.4 R **11 Claims**



Internal ball bearing races are produced by rolling an annular body within a sizing ring to produce the required contour and dimensions.

3,626,565

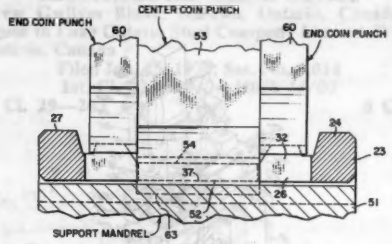
CAGE AND ROLLER METHOD

Hans W. Koch, Levittown, Pa., assignor to Roller Bearing Company of America, West Trenton, N.J.

Original application Nov. 24, 1969, Ser. No. 879,352. Divided and this application Nov. 10, 1970, Ser. No. 88,373
Int. Cl. B21d *53/12*
U.S. Cl. 29—148.4 C **4 Claims**

In cage and roller combinations suitable for operation between inner and outer members to form a bearing, a cage guided on its outside diameter is produced by forming a blank having thickened rim portions at the ends, relieved relatively thin portions inwardly of the rim portions, thickened guiding portions and outward retaining portions inwardly of the relieved portions and a relatively thin mid-length portion, then punching windows with parallel sides from the mid-length portion, the guiding and outward retaining portion and the relieved portion but not entering the rim portions, the windows being

relatively wide at the ends and relatively narrow at the middle, and then coining the crossbars desirably simultaneously to form lips at the guiding and outward retaining portions near the outside while retaining parallel sides at the guiding portions near the pitch diameter, and to displace metal from the mid-length portions so as to form inwardly converging side walls which will clear



the rollers and prevent escape of the rollers inwardly. The invention may provide cage and roller combinations in which a single roller in a window is guided adjoining the pitch circle near the end, the guiding portion outwardly converges to retain the roller against outward motion, and the window at the end terminates short of the rims.

3,626,566

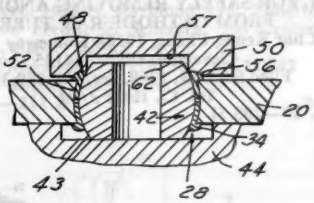
METHOD OF FORMING A BALL AND SOCKET JOINT

Norman R. Kilgour, Dearborn Heights, Mich., assignor to The Standard Forge Company, Detroit, Mich.

Continuation-in-part of abandoned application Ser. No. 758,516, Sept. 9, 1968. This application Mar. 30, 1970, Ser. No. 23,931

Int. Cl. B23p *11/00*

U.S. Cl. 29—149.5 B **10 Claims**



A method of forming a ball and socket joint including forming an aperture in a supporting member having a gradually increasing diameter from each end toward its center, disposing a first bearing member in one end of the aperture having an inner bearing surface conforming to the ball surface, supporting the ball within the aperture spaced a predetermined nominal clearance distance from the first bearing surface, forcing a second bearing member from the opposite end of the aperture between the ball and the aperture wall to provide a second bearing surface conforming to the ball surface, and releasing the ball to permit it to center itself within the bearing surfaces in rotatable relation therewith.

Additional methods of making such a ball and socket joint are disclosed, but the above recited basic method is preferred. The aperture formed in the support may be either spherical or of two frusto-conical sections, and in the preferred form is provided with a central circumferential flange or lip extending radially inwardly of the aperture.

3,626,567

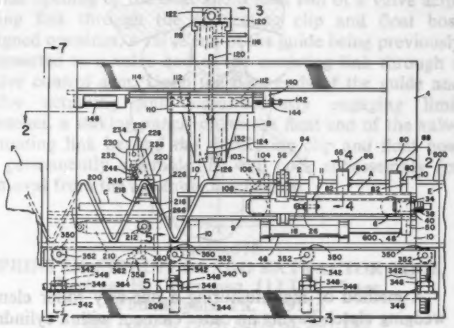
METHOD AND APPARATUS FOR MANUFACTURING STRUCTURAL SEMIJOIST

Anatol Michelson, Swarthmore, and Robert W. Cruger, Springfield, Pa., assignors to Gulf + Western Industrial Products Company, Grand Rapids, Mich.

Filed Apr. 28, 1970, Ser. No. 32,645

Int. Cl. B23p *17/00, 19/00*

U.S. Cl. 29—155 **20 Claims**



An apparatus and method for producing partial structural girders or semijoists from two elongated strand members by forming one strand member into a V-shaped configuration with an apex, which apex contacts the second strand member, and is joined thereto. The first strand member is fixedly supported at two preselected end points by two support means while a power forming means, operative through a predetermined distance, operates against the strand to form and stretch it into the V-shaped configuration. Movement of the power forming means forces one support means towards the other during the forming operation. At the bottom of the forming stroke, the apex of the V-shaped configuration contacts the second strand member and is joined thereto by joining means. This process is repeated until a semijoist is completed having a succession of V-shaped configurations.

3,626,568

METHOD FOR BONDING PINS INTO HOLES IN A HOLLOW TURBINE BLADE

Stanley M. Silverstein, Stratford, and Victor Strautman, Trumbull, Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Apr. 23, 1969, Ser. No. 818,557

Int. Cl. B21k *3/04;* B23p *15/02, 15/04*

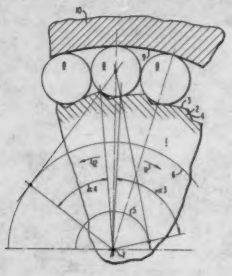
U.S. Cl. 29—156.8 H **2 Claims**

This disclosure relates to turbine blades and the method for bonding pins or inserts into the holes which are formed in the turbine blades during casting.

3,626,569
FREE-WHEELING DEVICE

Paul Kluwe, Fellbach, near Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany

Continuation-in-part of application Ser. No. 515,767, Sept. 14, 1965, which is a division of application Ser. No. 3,189, Jan. 18, 1960, now Patent No. 3,249,186. This application Mar. 17, 1970, Ser. No. 20,298
Int. Cl. B21d *53/26*
U.S. Cl. 29—159 **9 Claims**



A method of manufacturing a one-way roller element wedging clutch having an outer element with a cylindrical bore, an inner element with a toothed caming surface opposing the cylindrical bore, and a plurality of roller elements therebetween wherein the toothed surface is formed in one continuous step by a single surface hob by simultaneously rotating the hub and a gear blank, embedding the hob teeth in the gear blank and grinding the gear blank by the abrasive surface of the hob teeth.

3,626,570
TWO-PHASE COBALT IRON ALLOYS PREPARED BY POWDER METALLURGY

Bud W. Kushnir, Edmonton, Alberta, Robert William Fraser, Fort Saskatchewan, Alberta, and David John Ivor Evans, North Edmonton, Alberta, Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada

Filed Sept. 19, 1969, Ser. No. 859,252
Claims priority, application Canada, Nov. 15, 1968, 35,250
Int. Cl. B22f *1/00*
U.S. Cl. 29—182 **2 Claims**

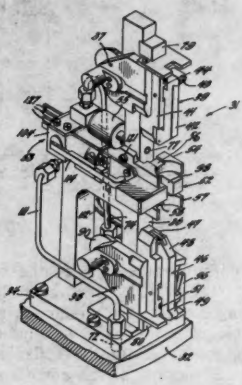
A ductile cobalt alloy containing about 1.5 to about 15% by weight iron and balance cobalt and being fabricated by powder metallurgy methods from cobalt and iron powders. The alloy has a two-phase microstructure in which the iron content of one phase is higher than the iron content of the other phase and has a predominantly face-centered cubic crystal allotropic structure and suppressed transformation from said face-centered cubic crystal structure to a hexagonal crystal structure at room temperature.

3,626,571
APPARATUS FOR ASSEMBLING SEALED CONTACT SWITCHES

Glenn Adrian Marlin, James Clifford McConnell, and Wilhelm Emil Albert Schmidt, Winston-Salem, N.C., assignors to Western Electric Company, Incorporated, New York, N.Y.

Original application Mar. 3, 1967, Ser. No. 621,730, now Patent No. 3,539,323, dated Nov. 10, 1970. Divided and this application Oct. 24, 1969, Ser. No. 871,186
Int. Cl. H05k *13/00*
U.S. Cl. 29—203 **4 Claims**

Apparatus for assembling sealed contact switches has a number of fixtures, each of which are incrementally moved through each one of a series of assembly stations. Each fixture has axially aligned vertical moving upper and lower carriages for supporting an upper and a lower contact, respectively. Positioned between the upper and lower carriages are laterally movable holding facilities for supporting a glass sleeve into which are moved the upper and lower contacts in an overlapping relationship. Facilities are provided on the fixture to magnetize the upper contact by way of the upper carriage to attract and support the lower contact which is subsequently released by the lower carriage. The lower contact is thereafter sealed by

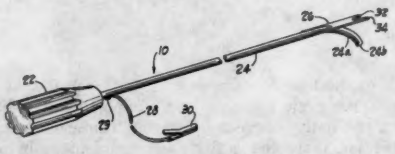


radiant energy within the lower end of the glass sleeve while forming gas is introduced into the upper end of the glass sleeve. Subsequently, the holding facilities are actuated to move the glass sleeve and sealed lower contact laterally with respect to the upper contact to set a predetermined gap between the overlapping portions of the upper and lower contacts. Thereafter the upper contact is sealed within the upper end of the glass sleeve in an enclosed pressurized chamber.

3,626,572
TOOL FOR SAFELY REMOVING ANODE LEAD FROM CATHODE RAY TUBE

Chor Keung Chang, 19308 Homeway Ave., Cleveland, Ohio 44135

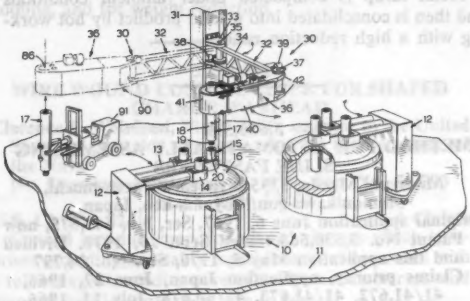
Filed Sept. 19, 1969, Ser. No. 859,322
Int. Cl. H01r *3/04*
U.S. Cl. 29—203 H **3 Claims**



A tool for safely removing an anode lead from a cathode ray tube such as a picture tube of a television set. A rod portion of the tool has an insulating handle at one end, a thin, flat, part with a V-shaped notch adjacent the other end, and an attached wire with a spring clamp at the end for grounding the tool during use. The rod portion terminates in an abutment portion at said other end. The flat notched portion is adapted to slide beneath a cup-like insulating cover piece on the end of an anode lead secured to the wall of a TV picture tube. Two contact prongs extend from the center of the cover piece into an aperture in the tube wall. When the tool is inserted beneath the cover piece, converging walls of the notched portion straddle the prongs and movement of the tool cams the prongs together to facilitate removal from the

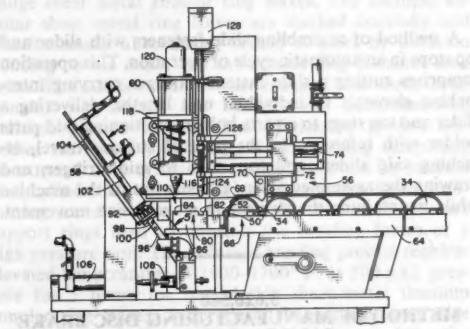
aperture. Where the contact is not sufficiently anchored to require a camming together of the contact prongs, the cover piece and prongs can be forced from the tube wall by external pressure applied with the abutment portion of the tool.

3,626,573
ELECTRODE HANDLING DEVICE
Andrew Gwilym Blake, Oshawa, Ontario, Canada, assignor to Lake Ontario Steel Company Limited, Whitby, Ontario, Canada
Filed Jan. 15, 1970, Ser. No. 3,014
Int. Cl. B23p *19/04;* **H05k** *13/00*
U.S. Cl. 29—203 **8 Claims**



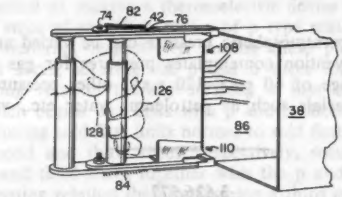
An electrode handling device for an electric arc furnace, in which threaded electrode sections are attached to electrodes mounted in the furnace to provide a continuous electrode feed. The device grips the electrode section, locates the section in line with the mounted electrode, and rotates the section to thread it onto the electrode.

3,626,574
AUTOMATIC ASSEMBLY MECHANISM FOR BALL COCK GUIDE AND FLOAT SUBASSEMBLY
Adolf Schoepe, 1620 N. Raymond Ave., Fullerton, Calif. 92631, and Fredric E. Schmuck, 535 Century Drive, Anaheim, Calif. 92805
Filed Feb. 19, 1970, Ser. No. 12,782
Int. Cl. B23g *7/10;* **B23p** *19/00*
U.S. Cl. 29—211 D **20 Claims**



A series of ball cock floats are fed consecutively by a vibrating supply bowl into a feed track and consecutively therealong to an assembly transfer station, with a series of connecting clips being similarly fed consecutively to a separated assembly transfer station, both the floats and connecting clips arriving at their respective transfer stations particularly positioned for following transfer operations. During a transfer operation preceding each assembly operation, a linearly movable float transfer arm engages each float at the transfer station and pushes that particular float to an assembly station float holder, while at the connecting clip transfer station a feed plunger moves a clip into a pivotal transfer arm mounted clip holder, the transfer arm subsequently pivotally moving the clip holder to its assembly station. In the respective assembly stations, the clip, U-shaped in configuration, has telescoped a float boss aligning clip leg portion and float boss openings. An operator then inserts a float end of a rigid guide through a guide opening of the float and a float end of a valve actuating link through the connecting clip and float boss aligned openings, a valve end of the guide being previously connected to a valve end of the actuating link through a valve control arm. Upon the float ends of the guide and valve actuating link simultaneously engaging limit switches, a staking punch stakes the float end of the valve actuating link beyond the connecting clip and float boss to permanently assemble the ball cock subassembly for removal from the assembly mechanism.

3,626,575
PRINTED CIRCUIT BOARD EXTRACTOR TOOL
Bertram H. Greenspan, 112 Delia Lane, Philadelphia, Pa. 19115
Filed Aug. 4, 1969, Ser. No. 847,193
Int. Cl. B25b *27/00*
U.S. Cl. 29—203 H **2 Claims**

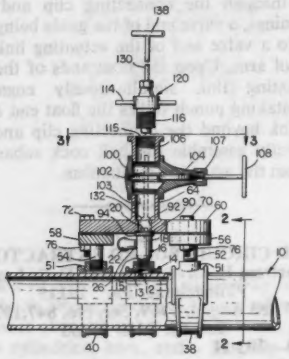


An extractor tool for removing slide captivated printed circuit boards from a connector housing including a frame of generally U-shaped configuration having a pair of spaced side flanges joined at one end thereof in a connecting web of variable width and having a slide of generally U-shaped configuration in sliding engagement within the said frame, the said slide terminating forwardly in a pair of circuit board affixing pins and the said frame terminating forwardly in a pair of spaced housing contacting stops whereby the spacing between the said pins may be varied by adjusting the width of the connecting web and whereby the distance between the pins and the stops may be varied by pulling the slide with respect to the connecting web. The extractor tool urges a printed circuit board forwardly with respect to its associated connector housing by positioning the pins within openings in the printed circuit board and the stops against stationary housing construction and then pulling the slide with respect to the web to apply extraction forces at the openings.

3,626,576
METHOD FOR REPAIRING PRESSURE LINES SUCH AS GAS MAINS AND THE LIKE
Charles William Ray, 525 Stadium Drive, Fort Wayne, Ind. 46805
Filed Mar. 17, 1969, Ser. No. 807,846
Int. Cl. B22d *19/10;* **B23p** *7/00*
U.S. Cl. 29—401 **8 Claims**

In repairing gas mains, a fixture is clamped to the main at the location of the repair, and a conduit is then joined to the main through a sealed fit. The conduit has a valve which separates the conduit into two compartments, and the end of the conduit is adapted to receive a tool mounting, the valve being opened and a tool passed through the conduit to perform repair operations on the

main. The tool mounting is connected to the conduit through a sealed connection, and the tool can be operated through the tool mounting means by an operator so that the repair operation occurs through a sealed conduit. The entire operation occurs with normal operation of the main under its usual operating condition of internal super-atmospheric pressure.

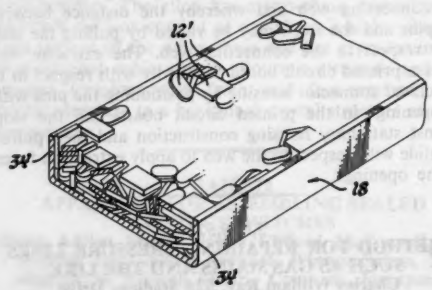


This superatmospheric pressure can be varied and the present invention contemplates pressures for gas mains in the range of 60 p.s.i.–120 p.s.i., other pressures for other materials such as petroleum, water etc., varying as desired.

3,626,577
METHOD OF RECLAIMING SCRAP FERROUS METAL SHEET WITHOUT MELTING

Clayton J. Trible, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation of application Ser. No. 852,711, Aug. 25, 1969, which is a continuation-in-part of application Ser. No. 737,775, June 17, 1968. This application Feb. 24, 1970, Ser. No. 13,368
Int. Cl. B23q *17/00*
U.S. Cl. 29—403 **14 Claims**



A method is disclosed for converting ferrous metal scrap, originating from sheet or strip metal, into reusable flat-rolled ferrous metal products. For example, many pieces of carbon steel offal, randomly sized and shaped but generally less than three inches in greatest dimension, are deposited on a long carrier sheet of substantially the same composition to a suitable height. The carrier sheet and offal are heated in a reducing atmosphere to about 2000° F. and then rolled into a strip or sheet of reusable flat-rolled steel stock.

3,626,578
CONVERSION OF METAL SCRAP TO USEFUL PRODUCTS

Clarence A. Price, Ann Arbor, Mich., and Alvin M. Sabroff and Thomas G. Byrer, Columbus, Ohio, assignors to Hoover Ball and Bearing Company, Saline, Mich.

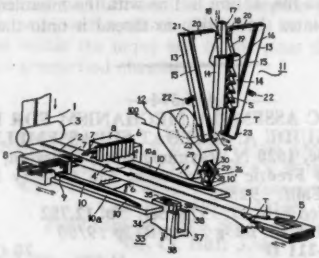
No Drawing. Filed July 2, 1968, Ser. No. 741,902
Int. Cl. B23q *17/00*
U.S. Cl. 29—403 **29 Claims**

Metal scrap is compacted under ambient conditions and then is consolidated into a solid product by hot working with a high reduction ratio.

3,626,579
METHOD FOR AUTOMATICALLY ASSEMBLING SLIDE FASTENERS

Masayuki Maeda, 5395 Nyuzen, Nyuzen-machi, Shimonikawa-gun, Toyama-ken, Japan

Original application June 6, 1967, Ser. No. 643,875, now Patent No. 3,530,563, dated Sept. 29, 1970. Divided and this application May 5, 1970, Ser. No. 34,797
Claims priority, application Japan, June 27, 1966, 41/41,672, 41/41,673, 41/60,678; July 11, 1966, 41/45,285
Int. Cl. B23p *11/00*
U.S. Cl. 29—408 **3 Claims**



A method of assembling slide fasteners with slider and top stops in an automatic cycle of operation. This operation comprises cutting a slide fastener stringer carrying interlocking elements to individual unit lengths, delivering a slider and top stops to a parts holder, positioning said parts holder with reference to the path of stringer travel, attaching said sliders and top stops to said stringer, and drawing the assembled slide fasteners out of the machine while maintaining the stringer in a successive movement.

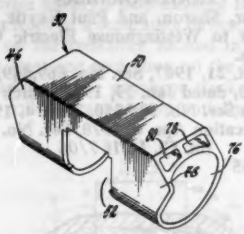
3,626,580
METHOD OF MANUFACTURING DISC BRAKE CALIPER HOUSINGS

Horacio Shakespear, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Original application Oct. 1, 1968, Ser. No. 764,261, now Patent No. 3,556,265, dated Jan. 19, 1971. Divided and this application Sept. 19, 1969, Ser. No. 859,383
Int. Cl. B23p *17/00*
U.S. Cl. 29—412 **1 Claim**

A disc brake caliper housing is made from an extruded pipe by cutting the pipe into segments and transversely notching each segment to provide space for re-

ceiving the disc to be braked and for mounting the brake pads. The pipe cross section pattern provides suitable



openings for mounting wheel cylinder assemblies, for cooling, and for weight reduction.

3,626,581
WIRE WOUND CONICAL LINER FOR SHAPED CHARGE WARHEAD

Clarence E. Weinland, Vista, Calif., assignor to the United States of America as represented by the Secretary of the Navy

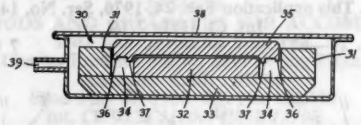
No Drawing. Filed June 5, 1970, Ser. No. 59,793
Int. Cl. B23p *17/00*
U.S. Cl. 29—424 **4 Claims**

Conical metallic liners for shaped charges which comprises providing a suitably formed mandrel precoated with a release agent, winding wire of uniform diameter on said mandrel and bonding each turn in place.

3,626,582
FABRICATION OF DIFFUSION BONDED BELLOWS

Joseph Melill, Rolling Hill Estates, Calif., assignor to North American Rockwell Corporation

Filed Mar. 5, 1970, Ser. No. 16,805
Int. Cl. B23p *19/04*
U.S. Cl. 29—454 **12 Claims**

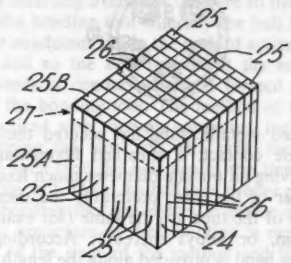


Metal bellows are fabricated by diffusion bonding thin gauge sheet metal annular ring leaves. The multiple annular sheet metal ring leaves are stacked coaxially and simultaneously alternatively joined in pairs by diffusion bonding on the inside and the outside ring diameter land areas. The stacked coaxial assemblage of thin sheet metal annular ring leaves are bonded into accordion-fold, multiple pleated bellows. The fabrication process embodies the use of pressurizing fixture tooling comprising an external steel cylindrical retainer ring and an internal steel cylindrical retainer plug, together with a force transmitting annular ram and multiple thin steel pressure support rings used to transmit the bonding forces of a high pressure ram. The diffusion bonding process requires elevated temperatures of 1600–1700° F. at 500 p.s.i. pressure for 5 hours for typical thin sheet metal titanium annular ring leaves. By properly shaping the inner edge and the external edge of the annular ram transmitting the bonding forces, the clean, alternative outside and inside annular land areas of adjacent pairs of the sheet metal ring leaves are bonded into homogeneous edges of an accordion-fold pleated bellows. The fixture tooling, including the steel force transmitting rings are later removed. Aluminum, stainless steel, titanium, nickel, tantalum, molybdenum, zirconium and columbium thin metal sheet stock may likewise be formed into bellows by this improvement in the fabricating process.

3,626,583
THERMOELECTRIC DEVICE

Colin Edward Abbott, Windsor, Guy Anthony Barnes, Earley, Reading, and John Francis Anthony McEntee, Greenford, Middlesex, England, assignors to Mining & Chemical Products Limited, London, England

Continuation of application Ser. No. 357,225, Apr. 3, 1964. This application June 18, 1969, Ser. No. 868,659
Claims priority, application Great Britain, Apr. 5, 1963, 13,612/63
Int. Cl. B01j *17/00;* **H01l** *15/00*
U.S. Cl. 29—573 **14 Claims**

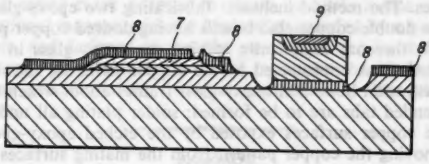


A method of making a thermoelectric device comprising the steps of providing pieces of p type material and n type material, respectively, cutting these pieces into first flat slices, securing the p and n slices together in alternating relation thereby forming a first composite unit which begins and ends with p and n slices, respectively, cutting said first units normal to said first surfaces into second and third slices, respectively, securing the second and third slices together with the p and n slices in alternating relation thereby forming a third composite unit, cutting said third unit normal to said first, second and third surfaces into slab-like matrices having a plurality of p and n type elements, insulating said elements from each other and conductively connecting said elements together in a predetermined manner.

3,626,584
METHOD OF MAKING MINIATURE HYBRID INTEGRATED CIRCUITS

Britton T. Vincent, Jr., Dallas, and Charles E. Earhart, Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of application Ser. No. 576,571, Sept. 1, 1966. This application July 25, 1969, Ser. No. 847,803
Int. Cl. B01j *17/00;* **H01l** *1/16*
U.S. Cl. 29—577 **5 Claims**



In the disclosed method a miniature hybrid integrated circuit is fabricated by selectively removing portions of the glaze from a ceramic substrate to expose portions of the substrate surface. Circuit components are disposed in thermal contact with the exposed portions and may be interconnected with passive circuit elements supported on the glaze.

3,626,585
METHOD OF FABRICATING A SUPER-CONDUCTIVE STRUCTURE

Alfred Paul Hammer, Paris, Alexis Charles Entz, Vaucresson, and Claude Levaire, Chauny, France, assignors to Compagnie Francaise Thomson Houston-Hotchkiss Brandt, Paris, France

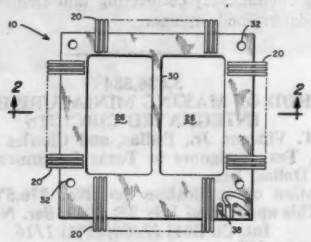
Filed Sept. 29, 1969, Ser. No. 861,910
Claims priority, application France, Oct. 18, 1968, 170,415
Int. Cl. H01v *11/00*
U.S. Cl. 29—599 5 Claims

An elongated metallic tube has secured therein, with substantial line contact, a sheathed filamentary superconductor, having an outside diameter much less than the inside diameter of the tube; preferably the sheath metal and the metal of the tube are the same (for example copper, aluminum, or alloys thereof). According to the method, a long band is provided along the length of which the superconductor is first bonded, for example by welding, or fusing of the sheath metal to the band; thereafter, the band is folded and formed into the tube, the lateral edges of the band being seamed together to form a fluid tight seal for example by welding, cold flowing or the like.

3,626,586
METHOD OF MANUFACTURING MULTIPLE EXTENDED TAB PRINTED CIRCUIT BOARDS

Jaken Y. Huie, Minneapolis, and George R. Macnamara, Burnsville, Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 23, 1970, Ser. No. 31,187
Int. Cl. H01f *7/06*
U.S. Cl. 29—604 8 Claims

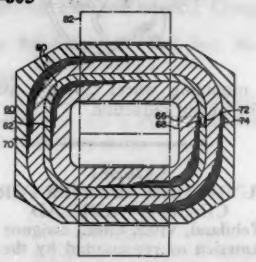


A method of simultaneously manufacturing a plurality of memory frames, each for the support of and electrical interconnection to a plurality of magnetizable memory cores. The method includes: fabricating two epoxy-glass-base double-copper-clad boards having desired copper patterns thereon; organically etching the epoxy-glass in selected areas unprotected by the copper patterns; forming registration holes and epoxy-glass frames about which the extended tabs are to be formed; solder plating all underside copper surfaces exposed by the etched epoxy-glass; removing the copper pattern from the mating surfaces of the boards; laminating together the boards on their epoxy-glass mating surfaces using the registration holes for tooling alignment; fabricating desired printed circuit and extended tab patterns on the outside (top and bottom) copper layers; separating the memory frames from each other and from the border strip; removing the solder plate from the underside of th extended tabs; and, tin coating the extended tabs and the printed circuit patterns.

3,626,587
METHODS OF CONSTRUCTING ELECTRICAL TRANSFORMERS

Frank R. Zickar, Sharon, and Paul Voytik, Sharpsville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Application Sept. 21, 1967, Ser. No. 669,549, now Patent No. 3,555,670, dated Jan. 19, 1971, which is a division of application Ser. No. 506,350, Nov. 4, 1965. Divided and this application Apr. 6, 1970, Ser. No. 25,721.
Int. Cl. H01f *7/06*
U.S. Cl. 29—605 7 Claims

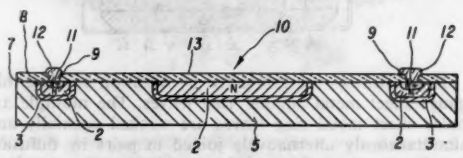


Methods of constructing encapsulated electrical windings or coils for transformers, with at least certain of the windings being formed of electrically conductive strip or foil. The strip or foil is coated with an adhesive prior to winding the coils, and the adhesive is set prior to encapsulation of the coils, to stabilize their dimensions. At least two coils are disposed in spaced, concentric relation within a mold, and castable electrical insulating means is then introduced into the mold and cured to a solid.

3,626,588
SILICON RESISTOR

Kenneth M. Durham, Jr., 629 W. 15th, and William W. Plumlee, 641 Spring Lane, both of Plano, Tex. 75074

Continuation of application Ser. No. 601,371, Dec. 13, 1966. This application Feb. 24, 1970, Ser. No. 14,722
Int. Cl. H01c *7/04*
U.S. Cl. 29—612 7 Claims



This disclosure relates to silicon resistors, and more particularly to a high resistance silicon resistor having a high positive temperature coefficient of the type wherein the resistive element is embedded in, but isolated from, a substrate, and to the method of making the same.

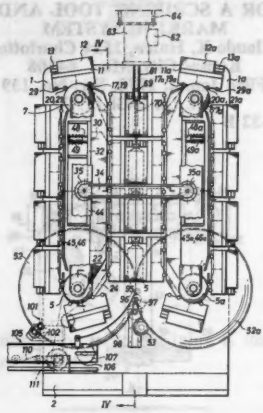
3,626,589
DEVICE FOR THE REMOVAL OF CONTAINERS OF THERMOPLASTIC SYNTHETIC MATERIAL

Gerhard Hansen, Hofener Strasse 47, D 7013 Offingen, Kreis Waiblingen, Germany

Filed Nov. 25, 1969, Ser. No. 879,722
Claims priority application Germany, Dec. 6, 1968, P 18 13 048.8
Int. Cl. B29d *23/03*
U.S. Cl. 425—307 12 Claims

The invention concerns a device for the removal, out of a production mold of thermoplastic containers produced by a blow molding process, and for the removal of the waste material from the containers. The device has a discharge device having a unit acting on one side on the container located in the production mould and a guide

member which brings the container in a position tilted against its production onto a conveyor track. A side displacement device having a stop member for the container is provided in front of a separating device. The unit acting on one side on the container located in the production mould has at least one projection on the wall part of the half mould adjacent the conveyor track and a drivable displacement roller arranged substantially at the point of



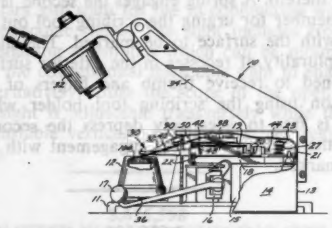
separation of the half mould. A stripper serves to remove any container still in the mould. The lateral displacement device has U-shaped stop members for the alignment of the container, before it is displaced into the separating device wherein spiral shaped projections of a pair of separating rollers grip onto the waste parts and remove them from the container. The bottles are then pushed away to the side by the lateral displacement device.

3,626,590

METHODS AND APPARATUS FOR ACCOMPLISHING ELECTRICAL WIRING

Charles Fredrick Miller, 2519 Strong Place, Anaheim, Calif. 92806

Filed May 28, 1968, Ser. No. 732,629
Int. Cl. B23k *21/00*; H01b *13/00*
U.S. Cl. 29—624 **5 Claims**



This invention relates to methods and apparatus for accomplishing electrical wiring. In the method the electrical conductor is formed to selected length with an integral enlargement at each end comprising conductor material. One of these enlargements is placed over one circuit point and the other enlargement is placed over a second circuit point which is to be electrically connected to the first. Bonding force is applied to each enlargement until the conductor is bonded to the selected circuit point. Practice of the invention is facilitated by the employment of a bonding apparatus in which the tool by which bonding force is applied to the enlarged conductor end is movable over a work station and in which provision is made for guiding the conductor wire so that one of its ends, together with the enlargement at that end, is positioned in the line of action of the bonding tool and is movable with it over the work station. Bonding energy is applied to bond that enlargement to a first circuit point so that the end of the wire is fixed to the work. Then the tools are moved over the surface of the work to the second bonding point where the conductor wire is severed by the application of heat in a way that utilizes surface tension of the molten end of the conductor wire to form a ball of conduction material at the severed end of the conductor, the other end of which is already connected to the work. A novel apparatus for accomplishing this step is disclosed and in the form specifically described includes a device for directing a flame at the wire so that it is severed adjacent the bonding tool whereby the ball formed at the end of the conductor lies in the path of action of the bonding tool and so the ball formed at the end of the remaining stock of conductor wire is formed out of line of action of the bonding tool. The method of the invention, when practiced with such an apparatus, includes the step of positioning the stock of wire with the ball formed at its end such that the ball lies in the line of action of the bonding tool. Thus, the ball is in proper position as the ball and bonding tool are moved together over the work piece. The apparatus of the invention is capable of practicing all of the steps of the method and if certain steps are accomplished manually or by other means, the apparatus of the invention is capable of conducting the remaining steps of the method. The specific apparatus selected for illustration in the drawing and detail description in the specification is arranged to accomplish bonding by a thermo-compressive method.

3,626,591

SAFETY RAZOR WITH MEANS FOR RETRACTING GUARD PLATE

Edward Robey, 1500 Crenshaw Blvd., Los Angeles, Calif. 90019

Filed May 18, 1970, Ser. No. 38,294
Int. Cl. B26b *21/00*
U.S. Cl. 30—54 **1 Claim**

A safety razor adapted to clamp its blade in the conventional manner, with the blade edge guarded by a guard plate, and designed so that the guard plate can be shifted laterally to a retracted position to expose the blade for more precise cutting, without protection by the guard plate.

3,626,592

BLADE HOLDER AND BLADE

George A. La Cas and William S. Smith, Staunton, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Nov. 13, 1969, Ser. No. 876,331
Int. Cl. B26b *5/00*
U.S. Cl. 30—339 **8 Claims**

A tubular blade holder particularly adapted for mounting a surgical blade at an angle to the axis of the holder

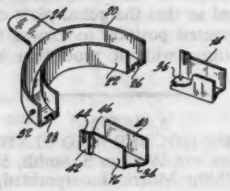
embodying an elongated sleeve, a shaft extending axially therethrough having a head for clamping the blade against one end of the sleeve, a knob at the opposite end having a screw threaded engagement with the shaft permanently

but rotatively secured to the sleeve, the knob being engageable against a compression spring adapted to be compressed into a solid non-elastic condition for positive locking of the blade.

3,626,593
ORTHODONTIC BRACKET
William V. Ridgeway, 3245 E. 1st St., Long Beach, Calif. 90803
Filed June 23, 1970, Ser. No. 49,107
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 A **9 Claims**

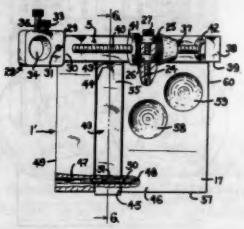
A wire engageable orthodontic bracket that is particularly adapted for mounting on a tooth encircling band. The bracket includes a recessed wire engaging central portion, which central portion has two wings extending therefrom in opposite directions. The wings are of such configuration that they tend to guide a tensioned elastomeric ring that they engage into a seated position with the central portion, with the band when so seated serving to anchor the wire in the recessed position.

3,626,594
SEPARABLE DENTURE TRAY
Ira D. Zinner, 165 N. Village Ave., Rockville Centre, N.Y. 11570, and Herbert Sherman, 200 E. 15th St., New York, N.Y. 10003
Filed Mar. 30, 1970, Ser. No. 23,888
Int. Cl. A61c *9/00*
U.S. Cl. 32—17 **4 Claims**



A dental impression tray comprising a central portion of generally arcuate shape and having detachable leg portions. There is provided a dovetail interlock between the co-planar bottoms of the central portions and the legs. A vertical sliding connection by way of cooperating pins and slots is provided, the entire dental impression tray being generally channel shaped and being provided with a handle on the central portion thereof.

3,626,595
HOLDER FOR A SCRIBING TOOL AND SURFACE MARKING SYSTEM
Claude K. Hulen, 1524 Charlotte, Kansas City, Mo. 64108
Filed Jan. 2, 1970, Ser. No. 139
Int. Cl. B43l *13/00*
U.S. Cl. 33—32 B **6 Claims**



A surface marking system including a slide member movable along an elongate straight edge between stop members mounted thereon to define limits of travel of the slide member and means for movably mounting a scribing tool on the slide member for selectively moving the scribing tool into and out of engagement with a surface to be marked wherein a scribing tool holder has a slide member shaped to engage and slide along the straight edge member and a lever is pivotally mounted on the slide member with a member for holding the scribing tool mounted on one end of the lever whereby the scribing tool mounted in the holding member may be selectively moved into and out of engagement with the surface to be marked. The slide member has a second lever pivotally mounted thereon and extending transverse to the first named lever and having one end connected thereto. A spring engages the second lever and the slide member for urging the scribing tool out of engagement with the surface to be marked. The slide member has a plurality of recesses in the exterior surface thereof positioned to receive thumb and fingers of a hand of a person using the scribing tool holder whereby one finger is free to selectively depress the second lever to move the scribing tool into engagement with the surface to be marked.

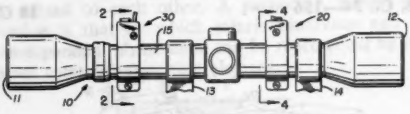
3,626,596
OIL FILLER TUBE PLUG AND DIP STICK COMBINATION
Raymond F. Manke, Racine, Wis., assignor to J. I. Case Company, Racine, Wis.
Filed Jan. 15, 1970, Ser. No. 3,131
Int. Cl. G01f *23/04*
U.S. Cl. 33—126.7 R **4 Claims**

A filler tube plug with a dip stick imbedded in the plug and extending therefrom. The plug has a series of rings shown spaced therealong on a shank portion of the plug, and the dip stick extends through the shank portion to be securely imbedded therein and to also reinforce the shank portion of the plug. A handle is also an integral part of the plug, and a shoulder is formed on the plug to limit insertion of the assembly into an

oil filler tube. The rings on the plug are flexible and are shown to have reduced outer ends for flexing on the

wall of the filler tube when the plug is inserted and removed relative to the filler tube.

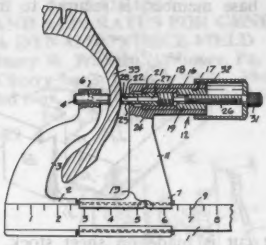
3,626,597
AUXILIARY GUN SIGHT
Chester R. Darrah, 3898 Sanford Road, Rootstown, Ohio 44272
Filed June 23, 1969, Ser. No. 835,435
Int. Cl. F41g *1/38*
U.S. Cl. 33—50 **5 Claims**



An auxiliary gun sight for use in conjunction with conventional telescopic sights. The sight includes front and rear open sighting assemblies which can be mounted on the tube of the conventional telescopic sight to enable the user to alternatively utilize the scope or the open sights. The front sight is adjustable transversely while the rear sight is adjustable vertically to permit proper registry of the weapon.

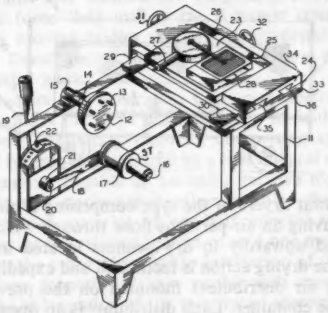
3,626,598
MICROMETER FOR DETERMINING SIZE OF CURING RIM
Elmer W. Robertson, P.O. Box 265, Duncansville, Pa. 16635
Filed Mar. 23, 1970, Ser. No. 21,700
Int. Cl. G01b *5/00*
U.S. Cl. 33—165 **10 Claims**

A properly fitted inside curing rim is vital in retreading tires, therefore it has to be accurately and quickly determined. To determine the size of the curing rim it is necessary to deduct the opposite thicknesses of the tire casing from the inside width of the matrix in which the retreading is to be performed. The micrometer herein, in the preferred form, has a double action adjustment whereby when the thickness of the tire casing is measured, the micrometer is adjusted for a double thickness, so that when the slide of the micrometer is placed to the correct



matrix distance, a direct reading of the rim width can be taken on the scale.

3,626,599
AUTOMATIC TIRE TREAD GAUGE
Bobby G. Purswell, Guntersville, Ala., assignor to Ashland Oil, Inc., Houston, Tex.
Filed Mar. 5, 1969, Ser. No. 804,515
Int. Cl. G01b *3/28, 5/18*
U.S. Cl. 33—169 B **2 Claims**

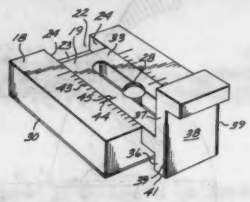


The disclosure relates to an automatic tire tread gauge for continuously measuring the thread depth of a tire. The apparatus has built-in resilient means to compensate for out-of-round variations in the tire to be tested, and transmits a continuous record of tire tread depth to a recording apparatus.

3,626,600
ADJUSTABLE INDEX DEVICE AND METHOD OF INDEXING ON A PLATEN SHEET STOCK
Donald D. Gaither, 14915 Barnwall St., La Mirada, Calif. 90638
Filed May 8, 1968, Ser. No. 734,836
Int. Cl. G01b *3/38*
U.S. Cl. 33—180 **4 Claims**

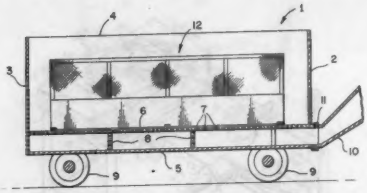
An adjustable index device which includes a base member having a stop member movably connected to the base member for limited movement, said stop member having a horizontal flange received in a shallow groove across the top of the base member so as to be limited to lineal movement, and also having an abutment portion with a depending section depending to a position even with the bottom of the base and an upstanding portion provided with a lip so as to be adapted to engage and index the edge of sheet stock; said device having means for selectively locking said stop member against movement relative to said base member. Said disclosure also discloses

a method of indexing sheet stock on a press platen using a plurality of index devices of the type just described, wherein the index device, with the stop member locked at approximately the mid-point of its movement relative to the base member, is secured to the platen; and



then a test cut is made on sheet stock, and then the amount that the stop member must be moved in order to obtain proper positioning of the edge of the sheet stock is determined; and then the stop member is unlocked, adjusted to the desired proper position, and then relocked against movement relative to the base member.

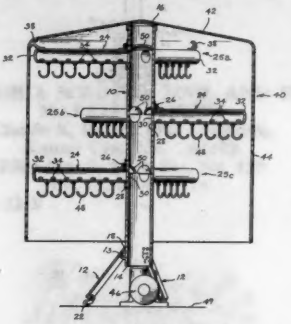
3,626,601
PEANUT DRYERS AND ATTACHMENTS FOR PEANUT DRYERS
Burton A. Moore, Rte. 1, Emporia, Va. 23847
Filed May 8, 1970, Ser. No. 35,819
Int. Cl. E26b *19/00*
U.S. Cl. 34—90 **6 Claims**



In peanut dryers of the type comprising a bin-like container having an air-pervious floor through which air may be forced upwardly to dry peanuts located in the container, the drying action is facilitated and expedited by one or more air distributors mounted on the previous floor inside the container. Each distributor is an open-bottomed structure extending from the floor upwardly, and is air-pervious at least in its upper sections, so as to receive air through its open bottom and discharge this air at multiple points within the mass of peanuts. Each distributor is of metal construction, with substantial areas of the upper portions being fabricated of open metal mesh, and preferably is detachably mounted on the air-pervious floor. The distributors are readily mountable on existing dryers, or can be supplied as integral parts of new dryers. Each distributor preferably is a box-like structure of horizontally elongate form, with its height being substantially greater than its width. Each distributor preferably is of a length approximately 2 feet less than the corresponding internal dimension of the bin-like container.

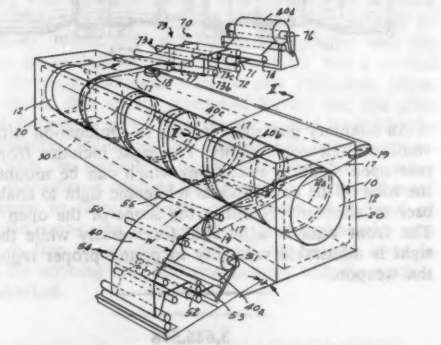
3,626,602
COLLAPSIBLE CLOTHES DRYER
John Glowacki, 425 N. Euclid Ave., Benton Harbor, Mich. 49022
Filed July 13, 1970, Ser. No. 54,204
Int. Cl. F26b *13/00*
U.S. Cl. 34—151 **11 Claims**

A collapsible clothes dryer having a vertically oriented central duct in which a plurality of clothes supporting ducts project laterally outwardly therefrom. The clothes supporting ducts are pivotally connected to the central duct so as to be shiftable from their laterally projecting position to a position generally paralleling the central duct. Each clothes supporting duct has one end in communication with an opening in the central duct when positioned in its laterally projecting position and includes a plurality of openings which extend longitudinally along the clothes supporting duct. Means are provided



for introducing heated air into the central duct. The heated air enters the clothes supporting ducts and passes out the openings therein to cause drying of the clothing carried by the clothes supporting ducts. A flexible hood is positioned over the clothes supporting ducts and serves to retain the heat from the air which passes out the openings in such ducts.

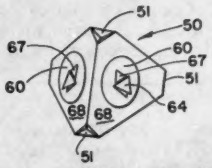
3,626,603
MEANS FOR THE CONTACT-FREE GUIDANCE AND PROCESSING OF WEB-SHAPED ARTICLES
Eberhard Breyer, Herrenberg, Germany, assignor to Schilde Aktiengesellschaft
Filed Jan. 23, 1970, Ser. No. 5,323
Claims priority, application Germany, Jan. 28, 1969, P 19 04 101.1
Int. Cl. F26b *13/00*
U.S. Cl. 34—156 **18 Claims**



Convenient, accurate and high speed conditions of web material over a course of travel where it is free from contact with any solid means is made possible by an apparatus comprising an elongated stationary cylinder having aerostatic means arranged on its surface which aerostatic means provides an outward force of a processing medium such as air against a first surface of a helical wrap of web material to keep it spaced from the outer surface. With a feeding means at the forward feed end of the cylinder inclined at an angle alpha (α) to the axis of the cylinder providing a helical constant web feed, an extracting means including a tension control means cooperates with the outward aerostatic force to keep the web in a state of equilibrium spaced from the

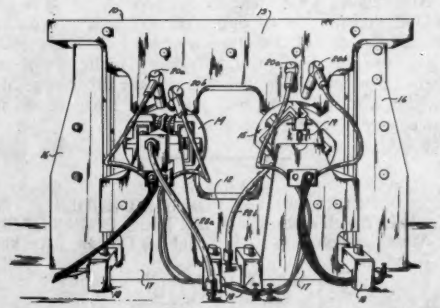
outer surface. The aerostatic bearing means comprises an internal blower or ventilator means which forces the processing medium out under pressure through rectangularly shaped pockets axially aligned in peripherally spaced rows. The rows have suction inlets therebetween through which the processing medium returns and the pockets may or may not have suction inlets therebetween. A convective means operates on the outer surface of the web to condition it. Suitable flow control means allow easy variation of the aerostatic pressure about and along the cylinder. Housing means and further conditioning means may be provided about the cylinder. A chain feed means assures quick and simple initial placement of the web.

3,626,604
THREE-DIMENSIONAL CHEMICAL MODELS
James B. Pierce, 147 Old Westford Road, Chelmsford, Mass. 01824
Filed June 23, 1969, Ser. No. 835,459
Int. Cl. G09b *23/26*
U.S. Cl. 35—18 A **10 Claims**



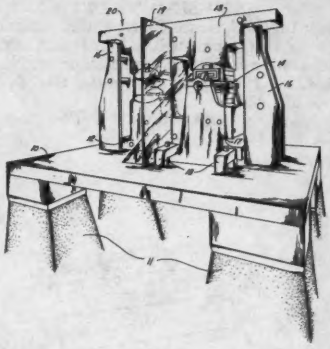
Models of atoms, molecules and radicals which may be made, transported and stored in flat, planar, sheet form, and which may be foldably erected rapidly and conveniently into three-dimensional, spatially-representative chemical models. Fastening tabs are adhered, or affixed, so that each model is a rigid, non-collapsible, shell-like structure. Attachment tongues bent slightly out of the plane of the sheet material to form tongue receiving pockets thereunder permit models to be detachably and slidably affixed to each other. A particular feature of the invention is that by which stearic hindrance and other space-dependent phenomena can be represented by use of a novel rotatable fastening element.

3,626,605
METHOD AND APPARATUS FOR GENERATING A SECONDARY GRAVITATIONAL FORCE FIELD
Henry Wm. Wallace, Ardmore, Pa. (803 Cherry Lane, Laurel, Miss. 39440)
Filed Nov. 4, 1968, Ser. No. 773,051
Int. Cl. G09b *23/06*
U.S. Cl. 35—19 **10 Claims**



Apparatus and method for generating a time variant non-electromagnetic force field due to the dynamic interaction of relatively moving bodies and for transforming such force fields into energy for doing useful work.

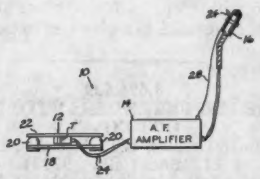
3,626,606
METHOD AND APPARATUS FOR GENERATING A DYNAMIC FORCE FIELD
Henry W. Wallace, Ardmore, Pa. (803 Cherry Lane, Laurel, Miss. 39440)
Filed Nov. 4, 1968, Ser. No. 773,116
Int. Cl. G09b *23/06*
U.S. Cl. 35—19 **10 Claims**



Apparatus and method for generating a non-electromagnetic force field due to the dynamic interaction of relatively moving bodies through gravitational coupling, and for transforming such force fields into energy for doing useful work.

The method of generating such non-electromagnetic forces includes the steps of juxtaposing in field series relationship a stationary member, comprising spin nuclei material further characterized by a half integral spin value, and a member capable of assuming relative motion with respect to said stationary member and also characterized by spin nuclei material of one-half integral spin value; and initiating the relative motion of said one member with respect to the other whereby the interaction of the angular momentum property of spin nuclei with inertial space effects the polarization of the spin nuclei thereof, resulting in turn in a net component of angular momentum which exhibits itself in the form of a dipole moment capable of dynamically interacting with the spin nuclei material of the stationary member, thereby further polarizing the spin nuclei material in said stationary member and resulting in a usable non-electromagnetic force.

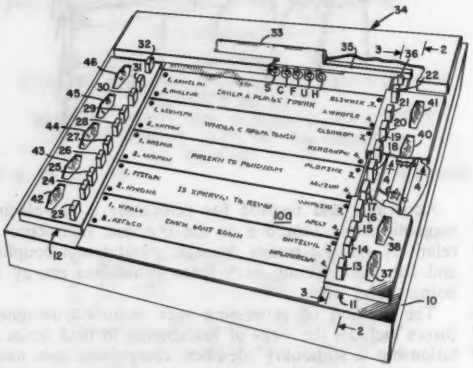
3,626,607
SPEECH TRAINING AID
William O. Schwake, 1133 W. 1st, Sulphur, Okla. 73086
Filed Feb. 24, 1970, Ser. No. 13,398
Int. Cl. G09b *21/00*
U.S. Cl. 35—35 A **3 Claims**



A speech training aid for simultaneously imparting tactile and visual indication of speech and speech patterns including electronic amplification of an instructor's vocal

utterances which is transmitted to provide tactile perception to a recipient by a transducer mechanically applying amplified vibrations to a panel in contact with the hands or feet of the recipient. The tactile sound vibration sensation is supplemented visually by a lamp energized in response to the electrical energy and frequency of an instructor's voice.

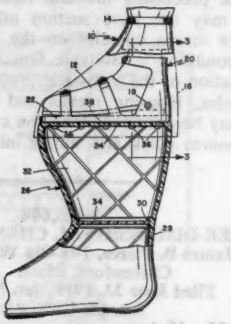
3,626,608
ELECTRONIC EDUCATIONAL AND AMUSEMENT DEVICE
Frank Ingeneri, Santa Clara, Calif., assignor to Self Development Inc., San Jose, Calif.
Continuation-in-part of application Ser. No. 629,604, Apr. 10, 1967. This application Dec. 5, 1969, Ser. No. 882,420
Int. Cl. G09b *7/06*
U.S. Cl. 35—48 R **14 Claims**



An electrical device which is adapted for use either as a teaching aid or an amusement device for testing a person's knowledge in various subjects. This device is provided with a question card which is also adapted to control the programming of the electrical memories provided to the device. The question card has a plurality of questions printed thereon which are adapted to be aligned with the play switches of this device when the card is placed on the panel positioned to control the programming switches. The programming switches are actuated by a programming bar. This bar closes the programming switches which are aligned with perforations provided to the question card. This device is provided with a single battery and a power circuit which is adapted to charge the various capacitors of the memory, either positively or negatively, depending upon the programming of the device. This device is also provided with a circuit whereby either questions with multiple choice two or multiple choice four answers may be employed therewith. It is also provided with a circuit for counting the number of correct answers provided to a given set of questions.

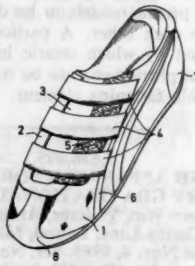
3,626,609
COSTUME LEG EXTENDERS WITH NATURAL FOOT COVERS
Evan R. Cramer, 1420 Arlington Place, El Cajon, Calif. 92021
Filed July 2, 1970, Ser. No. 51,781
Int. Cl. A43b *3/10*
U.S. Cl. 36—7.5 **9 Claims**

A costume item for the lower leg and foot in three interconnected principal parts, namely, a bell bottom pant leg simulating cover for the natural foot of the user, a sandal connected to the cover, and a leg or pedal extender having unique means for safety attachment to the sandal. The pedal extender is conceived as ordinarily



grotesque and of course contributes the principal costuming, comic or toy characteristic, while the foot cover is primarily to give the illusion of leg length extension.

3,626,610
SPORT SHOE
Rudolf Dassler, Herzogenaurach, Germany, assignor to Puma-Sportschuhfabriken Rudolf Dassler KG, Herzogenaurach, Germany
Filed Mar. 13, 1969, Ser. No. 807,020
Claims priority, application Germany, Mar. 27, 1968, P 31,165
Int. Cl. A43b *23/00*
U.S. Cl. 36—50 **4 Claims**

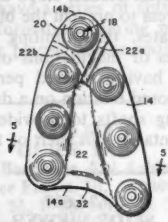


An athletics shoe made of fabric and having a longitudinal division on its upper on which is provided adjacent one edge of the division at least one strap extending across the division and having a multitude of small barbs on its underside and adjacent the other edge of the division a rough facing with which the barbs of the strap can engage to form a separable fastener.

3,626,611
CLEAT PLATE FOR GOLF SHOES
Louis E. Bernier, Rockland, and James P. Giblin, Milton, Mass., assignors to E. T. Wright & Co., Inc., Rockland, Mass.
Filed Aug. 24, 1970, Ser. No. 66,503
Int. Cl. A43c *15/00*
U.S. Cl. 36—67 R **13 Claims**

Cleat plates adapted to be incorporated in the bottom of a shoe by molding of an elastomer about the cleat plates to attach them to the shoe, the cleat plates corresponding in configuration to the portions of the shoe

bottom in which they are to be incorporated and having extending from one broad side a plurality of cleats, said cleats being arranged symmetrically with respect to the longitudinal center line of the plate; characterized in that the cleat plates have at the broad side from which the cleats extend, in the area intermediate the cleats and extending along the longitudinal center line, shallow recesses which reduce the thickness of the plates, said recesses commencing at one end and extending toward the other end beyond the midlength of the plates. Additional recesses may extend from the opposite end of the cleat plates toward the one end.

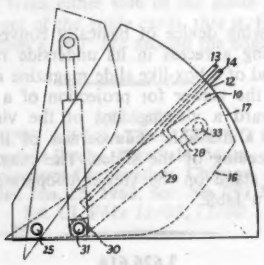


3,626,612

TILTABLE TRACTOR BUCKET

Heinrich Fritz Liebrecht, Great Ryburgh, England, assignor to Leeford (London) Limited, Great Ryburgh, Norfolk, England

Filed Feb. 20, 1969, Ser. No. 800,924
Claims priority, application Great Britain, Feb. 10, 1968, 8,195/68
Int. Cl. E02f *3/81*
U.S. Cl. 37—118 2 Claims



The invention provides a tractor bucket comprising a main housing support structure to which a tiltable bucket is pivoted by means of jacks that are housed in pairs of walls which form the end walls of the bucket, the jacks lying at all times within the side view area of the bucket.

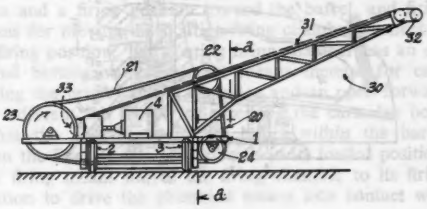
3,626,613

CONTINUOUS LOADER FOR BULK MATERIAL

Agricol Jullien, Salin de Giraud, France, assignor to Compagnie Saliniere de la Camargue Salicam, Paris, France

Original application July 25, 1966, Ser. No. 567,717. Divided and this application Nov. 12, 1969, Ser. No. 871,280
Claims priority, application France, July 23, 1965, 25,822
Int. Cl. E02f *3/14, 3/24*
U.S. Cl. 37—190 3 Claims

A continuous loader for bulk material comprising a frame member, a plurality of buckets with a cutting edge on each of the buckets for cutting into the material and means for the displacement of the buckets upwardly and rearwardly and for inverting the buckets to dump the material, a first conveyor behind the shovel in the form of an endless belt having a horizontally disposed lower portion adjacent the upwardly inclined end portion of the shovel, an ascending concave portion and a horizontally disposed upper portion spaced vertically from the lower portion with means for driving the first conveyor at a linear speed to impart centrifugal force to the material thereon sufficient to overcome gravity whereby the material deposited on the top surface of the lower portion remains on the surface during conveyance through the concave portion to the underside of the upper portion, a second conveyor having a portion located beneath the upper portion of the first conveyor to receive the material falling gravitationally from the bottom side of the upper portion of the first conveyor whereby the material collected by the shovel travels to the first conveyor and from the first conveyor onto the second conveyor for discharge of the material by the second conveyor.

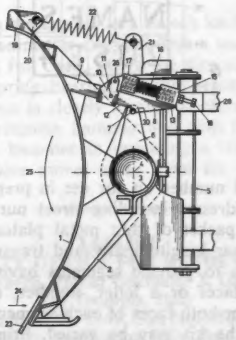


3,626,614

BLADE ARRANGEMENT FOR A SNOWPLOW AND THE LIKE

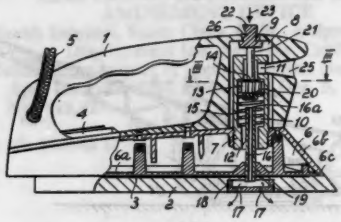
Anton Kahlbacher, 8 Aschbachweg, 6370 Kitzbuhel, Tirol, Austria

Filed Dec. 18, 1969, Ser. No. 886,422
Claims priority, application Austria, Jan. 2, 1969, A 3/69
Int. Cl. A01b *61/00*
U.S. Cl. 37—42 VL 8 Claims



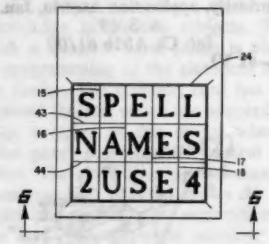
The blade of a snow plow is pivoted on the associated vehicle for movement about a horizontal axis, and normally prevented from pivoting by a spring loaded detent on the blade engaging a latch pin on the fixed blade support. When the lower edge of the blade hits an immovable obstacle, the detent is released, and the blade can yield. When the plow thereafter is backed up, a spring returns the blade to its normal position and automatically engages the detent with the latch pin.

3,626,615
ELECTRIC IRON WITH STEAM EMISSION UNDER PRESSURE, TRANSFORMABLE INTO A ROOM HUMIDIFIER
Mario Zuccarello, Via Boncompagni 67, Milan, Italy
Filed Feb. 11, 1970, Ser. No. 10,413
Claims priority, application Italy, Feb. 25, 1969, 13,270/69
Int. Cl. D06f 75/06
U.S. Cl. 38—77.8 5 Claims



An electric iron with steam emission for moistening the objects to be ironed, the steam being produced by heating water in a suitable reservoir situated above the plate by means of an electrical resistance and in which use is made of a switching valve which makes the water pass through the ironing plate in the form of steam and may be changed over to obtain dry ironing.

3,626,616
LETTER AND NUMBER KITS AND THE PROCESS OF PREPARING SAME
Joseph P. Seme, Walton Hills, Ohio, assignor to Sem-Torq, Inc.
Filed Oct. 2, 1969, Ser. No. 870,495
Int. Cl. B65d 15/16
U.S. Cl. 40—63 10 Claims

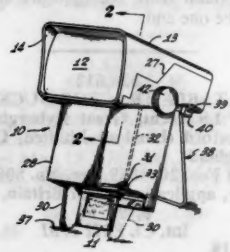


A letter and number kit for use in preparing signs or names and addresses including street numbers. The kit consists of a packet of thin metal plates, each having upper and lower longitudinally and transversely extending score lines to provide segments having a blank on one or both faces or a letter, number, or punctuation mark on one or both faces of each segment. The number of letters in the kit may be varied. Primary letters of the alphabet which are used more frequently than other letters are present in the kit in a greater number than secondary letters which in turn are present in the kit in a greater number than tertiary letters. For instance, in comparatively large kits from approximately eight to eleven of each of the primary letters, from six to seven of each of the secondary letters and from approximately two to five of each of the tertiary letters may be present.

Means including special blades are provided to respectively cut upper and lower transversely and longitudinally extending indentations or score lines to divide the plate into rectangularly-shaped segments. In both operations, blades having opposed tapered cutting edges may be provided in both the upper and lower dies of the press for separately cutting both the longitudinally and the transverse score lines on indentations and while the press is set to provide oppositely disposed upper and lower score lines in the thin metal blades, stops are provided in the lower bed of the press to prevent the blades from severing the thin metal plates, thus limiting the depth of the opposed score lines or indentations of the blades.

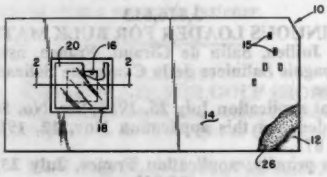
Circular blades having tapered peripheries may also be arranged in opposed relation on a driving and a driven shaft or on driving shafts to provide upper and lower score lines or indentations in each of the metal plates.

3,626,617
SLIDE VIEWER
Gerald J. Frey, 1834 Devon Road, Pasadena, Calif. 91103
Filed Mar. 27, 1970, Ser. No. 23,229
Int. Cl. G09f 11/14
U.S. Cl. 40—98 13 Claims



A slide viewing device of basically conventional construction having a recess in its underside receiving the open upper end of a box-like slide magazine and properly positioned in the viewer for projection of a slide in the magazine toward a viewing lens of the viewer, which is coupled to a movable slide carrier of the magazine for manual feeding of the slides. The magazine and a foldable wire stand on the viewer cooperate to support the latter on a table.

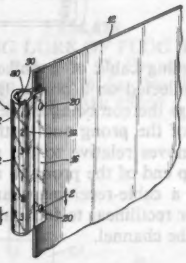
3,626,618
INFORMATION BEARING CARD
Frederick F. Tone, Holly, and Horace G. Warren, Hilton, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 12, 1969, Ser. No. 875,892
Int. Cl. G09f 1/10
U.S. Cl. 40—158 B 8 Claims



An information bearing card is provided for receiving an information bearing media such as a chip of photosensitive film and capable of being coded so as to be easily retrieved from a plurality of similar cards. More

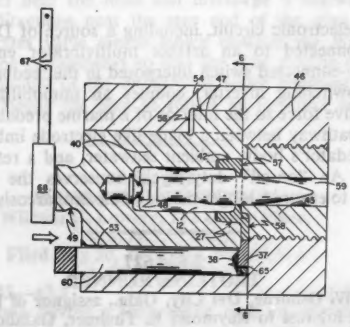
specifically, the information bearing card is made up of at least first and second laminar layers, which are secured together with a suitable adhesive. The first and second laminar layers respectively have a larger and a smaller aperture therein. The information bearing medium or chip has dimensions intermediate between the smaller and larger apertures and is disposed within the larger aperture of the first laminar layer. Further, the first laminar layer may have a series of slits or apertures disposed about the information bearing medium to relieve stresses that may be placed on the mounted information bearing medium.

3,626,619
GUIDE TAB
Harold W. Boedeker, 534 Ashland Ave., River Forest, Ill. 60305
Filed Jan. 31, 1968, Ser. No. 701,980
Int. Cl. B42f *21/04*
U.S. Cl. 40—360 **3 Claims**



Guide tabs for use on guide cards wherein indicia carrying means inserted in the transparent guide tabs are viewable from either side of the guide card or from directly in front of the guide cards, that is, from positions anywhere within a 180° arc around the edge of the guide card.

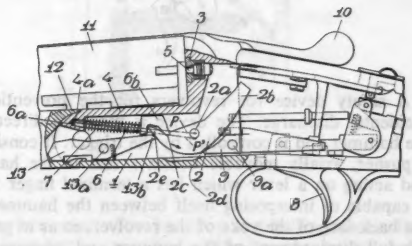
3,626,620
GUN HAVING A FLOATING FIRING CHAMBER
John Gonsalves Rocha, Westfield, Mass., assignor to Maremont Corporation, Chicago, Ill.
Filed Jan. 15, 1969, Ser. No. 791,308
Int. Cl. F41c *11/02, 13/00*
U.S. Cl. 42—15 **7 Claims**



A caseless small arms cartridge including a generally cylindrical solid propellant body having a bullet projecting from the front end thereof with an organic plastic seal ring and link element mounted on the bullet with the bullet projecting forwardly therebeyond. The seal ring has an outer surface of a diameter greater than that of the solid propellant body for providing a seal with a surrounding firing chamber and has an arm portion extending radially outward beyond the ring with a bore for receiving either the bullet of a second like cartridge for assembling a plurality of cartridges to provide a belt thereof or for engaging the loading plunger of the gun breech.

The gun for firing such caseless cartridges comprises a receiver element, a barrel mounted therein, a floating firing chamber element mounted in the receiver element for limited movement between a loading position away from and a firing position toward the barrel, and firing means for moving the floating firing chamber element to its firing position. The floating firing chamber has an enclosed bottom with abutment means thereon for contacting the primer of the cartridge and an open forward end adjacent the barrel for receiving the cartridge body within the chamber with the bullet within the barrel when the floating firing chamber is in its loaded position. The firing means moves the firing chamber to its firing position to drive the abutment means into contact with the primer to fire the cartridge.

3,626,621
PERCUSSION FIRING MECHANISM FOR A BREECH-LOADED GUN
Chiyoki Ido, Kochi, Japan, assignor to Kabushiki Kaisha Miroku Seisakusho, Kochi, Kochi Prefecture, Japan
Filed Feb. 25, 1969, Ser. No. 802,123
Claims priority, application Japan, Mar. 5, 1968, 43/13,848
Int. Cl. F41c *19/00*
U.S. Cl. 42—41 **2 Claims**

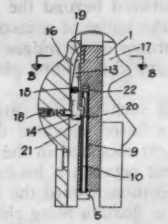


A percussion mechanism in a breech loading gun where a percussion hammer is engaged with a sear which holds the hammer at full cock, where the direction of force of a preloaded spring bearing on the percussion hammer through a stirrup is closely located at the center of rotation of the percussion hammer and with the rotation of the percussion hammer in operating a trigger, the said direction of force moves away from the said center of rotation.

3,626,622
SAFETY DEVICE FOR REVOLVERS
Aldo Uberti, Piazza Garibaldi 3, Gardone Val Trompia, Italy
Filed Sept. 10, 1969, Ser. No. 856,548
Claims priority, application Italy, July 16, 1969, 2,789/69
Int. Cl. F41c *17/00, 17/08*
U.S. Cl. 42—66 **3 Claims**

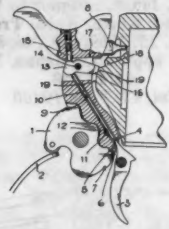
A safety device for revolvers for the prevention of accidental discharge. The device is mounted directly on the hammer and is controlled by the trigger. It consists of: a balance lever pivotably connected to the yoke and having a lower finger and an upper appendix and angularly movable in a plane parallel to the back face of the yoke; a pusher axially movable and cooperating with

the trigger's blocking tooth; and an inclined upper surface near the upper extremity of the pusher for positioning



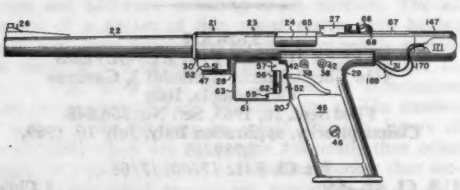
the balance lever between the hammer and the back face of the yoke.

3,626,623
HAMMER MOUNTED SAFETY DEVICE FOR REVOLVERS
Aldo Uberti, Piazza Garibaldi 3, Gardone Val Trompia, Italy
Filed Aug. 8, 1969, Ser. No. 848,583
Claims priority, application Italy, June 25, 1969, 2,779/69
Int. Cl. F41c *17/00, 17/08*
U.S. Cl. 42—66 **3 Claims**



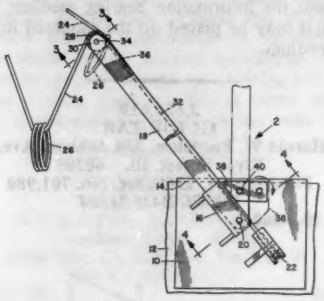
A safety device for revolvers for the prevention of accidental discharge. The device is mounted directly on the hammer and is controlled by the trigger. It consists of a pusher, axially movable within a seat in the hammer and acting on a lever which has a terminal finger which is capable of interposing itself between the hammer and the back face of the yoke of the revolver, so as to prevent the full displacement of the hammer and, consequently, of the firing pin.

3,626,624
ELECTRO-MECHANICAL FREE PISTOL
Franklin C. Green, 6304 Locker Lane, San Antonio, Tex. 78238
Filed Mar. 10, 1969, Ser. No. 805,470
Int. Cl. F41c *11/00, 19/00, 19/12*
U.S. Cl. 42—84 **11 Claims**



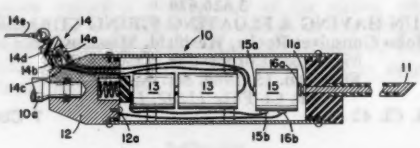
An electro-mechanical free pistol wherein the barreled action, including the firing mechanism, does not greatly exceed the outside diameter of the barrel except for the bolt handle and sights, said barreled action serves as a platform upon which the grip and trigger switch are adjustably positioned and electrically connected.

3,626,625
MEANS AND METHOD FOR STRIPPING PURSE RINGS ON A PURSING LINE BEING HAULED IN
Morris L. Whaley, 4140 The Hill Road, Bonita, Calif. 92002
Filed Sept. 5, 1969, Ser. No. 855,578
Int. Cl. A01k *73/12*
U.S. Cl. 43—4.5 **10 Claims**



Rings on a pursing cable of a purse seine fishing net are stripped or collected on a prong, that portion of the cable with the rings thereon being made to carry the rings over the tip end of the prong and to traverse the prong. Since the cable moves relative to the prong a sheave is provided in the tip end of the prong to minimize abrasion of the cable and a cable-receiving channel in the prong is gently curved or rectilinear to facilitate the threading of heavy cable into the channel.

3,626,626
SHARK DART ELECTRONIC CIRCUIT
Clarence G. Blanc, Escondido, Calif., assignor to the United States of America as represented by the Secretary of the Navy
Filed July 24, 1970, Ser. No. 58,025
Int. Cl. H05c *1/00;* **A01k** *81/04;* **F41b** *5/02*
U.S. Cl. 43—6 **5 Claims**



An electronic circuit, including a source of DC potential connected to an astable multivibrator enabling a serially-connected switch interposed in the feedback loops of a switching inverter, couples an immobilizing electromotive force to the interior of a marine predator's body via a pathway between a blade-like electrode imbedded in the predator's body, ambient seawater, and a return electrode. An "on-off" duty cycle conserves the potential source to ensure a longer period of electronarcosis.

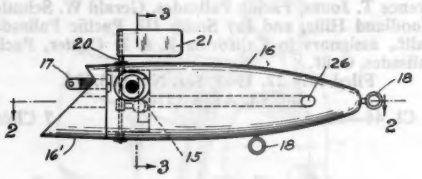
3,626,627
TROTLINE RUNNER
Twin W. Osborne, Del City, Okla., assignor of fractional part interest to Raymond E. Theimer, Oklahoma City, Okla.
Filed Apr. 1, 1970, Ser. No. 24,597
Int. Cl. A01k *79/00, 91/00*
U.S. Cl. 43—27.4 **10 Claims**

A pair of guide units for securement to longitudinally spaced portions of a boat side. Each of the guide units includes a pair of radially spaced horizontally disposed

and journalled grooved wheels and a third grooved wheel disposed on the side of a line tangent to corresponding sides of the first mentioned wheels remote from said wheels and swingable toward and partially through that

line to a position with the outer periphery of the third grooved wheel at least partially embraced between and slightly spaced from the aforementioned corresponding sides of the first mentioned wheels.

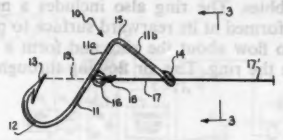
3,626,628
FISHING LURE OF PLUG TYPE
Emory L. Weimer, P.O. Box 57, Orondo, Wash. 98843
Filed Jan. 16, 1970, Ser. No. 3,373
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.03 **11 Claims**



This plug has, near its forward end, at least one external rudder type vane swingingly supported by a pivot post whose axis is in the plane of the vane and is perpendicular to and intersects the longitudinal axis of the plug. The vane can swing to both sides of a medial plane common to the axis of the pivot post and the axis of the plug and detent means lightly but releasably holds the vane in either of its maximum inclined positions. The plug has two water passageways which receive water near the head and discharge it sidewise in opposite directions near the rear end of the plug. The vane operates valve means which controls the flow of water in the passageways so that the plug guiding action of the vane and of the discharging water augment each other in causing the plug to follow an irregular zig-zag course.

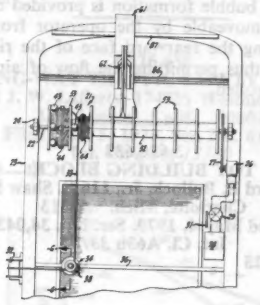
3,626,629
WEED-PROOF FISHHOOK
William H. Lowery, 112 Grove Place, Utica, N.Y. 13501
Filed July 20, 1970, Ser. No. 56,514
Int. Cl. A01k *83/00*
U.S. Cl. 43—43.2 **1 Claim**

A fishhook having a long shank bent at substantially a right angle to provide a shank portion extending from the other shank portion in a direction opposite to that in which the point extends. There is an eye at the end of the shank and a second eye between the right angle bend of the shank and the curve of the hook so that, when the leader is brought through the end eye and tied to the second eye, the shank is pulled ahead of the point preventing weeds from entering and engaging the hook curve. When a fish is hooked the pull of the line through both eyes



is in substantially the direction in which the point is facing because the hook is weighted by the fish.

3,626,630
FISH LINE REELING AND BAITING APPARATUS
Kenneth F. Tison, Crescent City, Calif., assignor to Marine Construction & Design Co., Seattle, Wash.
Filed Aug. 22, 1969, Ser. No. 852,165
Int. Cl. A01k *79/00, 83/02, 97/00*
U.S. Cl. 43—6.5 **13 Claims**



A semi-automatic line handling and baiting system for commercial fishing including a plurality of rotatable reels adapted to receive and dispense fish line with each reel including spokes on which spaced fish hooks on the line are engaged. The baiting portion includes a slotted bait container through which the line and hooks are drawn for hooking bait as line is fed into the water and a slotted trough above the container for accommodating the passage of floats and weights attached to the line.

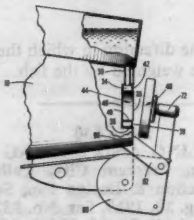
ERRATUM

For Class 46—74 see:
Patent No. 3,626,555

3,626,631
BUBBLE GENERATOR
Victor S. Lerman, 149 Essex St., Malden, Mass. 02148
Filed May 1, 1970, Ser. No. 33,729
Int. Cl. A63h *33/28*
U.S. Cl. 46—7 **26 Claims**

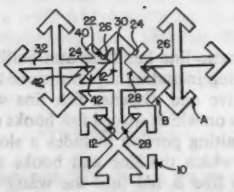
This disclosure includes a soap bubble generator adapted to generate a continuous, controllable stream of soap bubbles in response to a stream of air in which the device is placed, as when mounted on a bicycle. The device includes a specially constructed bubble ring which is supported centrally within the outlet end of a tube which also is open at its forward end to ingest and direct air flow

rearwardly toward and through the ring along a substantially laminar path. The bubble ring is of hollow, annular construction, the hollow of the ring being in constant communication with a source of soapy liquid adapted to form soap bubbles. The ring also includes a number of outlet orifices formed at its rearward surface to permit the soapy liquid to flow about the ring and form a film over the opening in the ring. The air flowing through the tube



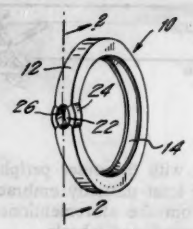
and the ring generates a continuous stream of bubbles which are emitted from the ring, the soapy liquid flowing continually to the ring as the bubbles are generated. Control of the bubble formation is provided by a sealing pad which is moveable by the operator from a closed position abutting the rearward face of the ring to a remote position thus permitting the flow of air and soapy fluid to be controlled.

3,626,632
TOY BUILDING BLOCK
Richard E. Bullock, Jr., 116 E. Shaw St., Charlotte, Mich. 48813
Filed May 4, 1970, Ser. No. 34,043
Int. Cl. A63h *33/08*
U.S. Cl. 46—25 **12 Claims**



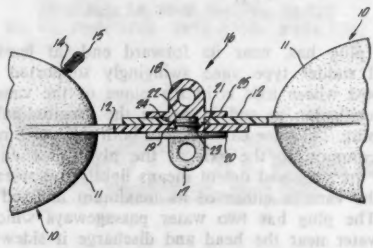
A toy building block is formed as an extruded or molded unit, of substantially square cross-sectional configuration, the four sides of the block being provided with longitudinally extending medial grooves having an arrowhead-shaped transverse section, whereby the corners of the block are formed into arrows arranged in a cruciform design, the heads of the arrows being undercut with flanges arranged substantially at right angles to each other and extending from the body of the arrowhead. The arrowheads of one block will fit within the grooves of a second block. The arrowheads not only can fully seat in a complementary groove of a substantially identical block, but an arrowhead of one block can partially seat in an undercut portion of the groove of a second block, an arrowhead of the second block engaging the arrowhead of the first block by the same flanges. When the two blocks are thus engaged, they are disposed in parallel alignment. When the arrowhead of one block is fully engaged in a groove of a second block, the cruciform core of the first block is at 45° to the cruciform core of the second block.

3,626,633
MAGNETIC TOY
Louis Meyer, 5 Allie Magellan, Choisy-le-Roi, France
Filed July 1, 1970, Ser. No. 51,527
Claims priority, application France, July 28, 1970, 6925688
Int. Cl. A63h *33/26*
U.S. Cl. 46—236 **5 Claims**



The invention relates to a magnetic toy provided with an annular or circular support having inner and outer guide paths for a metal ball to pass therealong. The outer guide path is magnetized, and the inner and outer paths are connected by a passageway or opening so the ball can pass therebetween and move along the paths when the toy is manipulated by hand.

3,626,634
CONSTRUCTION SET
Lawrence T. Jones, Pacific Palisades, Gerald W. Schmidt, Woodland Hills, and Jay Smith III, Pacific Palisades, Calif., assignors to California R & D Center, Pacific Palisades, Calif.
Filed July 22, 1969, Ser. No. 843,505
Int. Cl. A63h *33/04*
U.S. Cl. 46—23 **7 Claims**

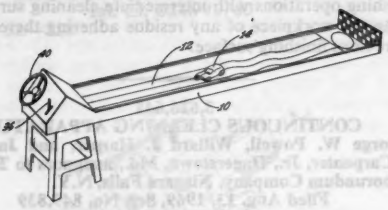


A toy modular construction set is disclosed having a plurality of inflatable elongated elements of a plastic material that are interconnectable at their ends by fasteners to enable the elements to be assembled into structures of various configurations.

3,626,635
MAGNETICALLY CONTROLLED APPARATUS
John D. Birdsall, 17446 Posetano Road, Pacific Palisades, Calif. 90272
Filed Dec. 31, 1970, Ser. No. 103,254
Int. Cl. A63h *18/10*
U.S. Cl. 46—240 **12 Claims**

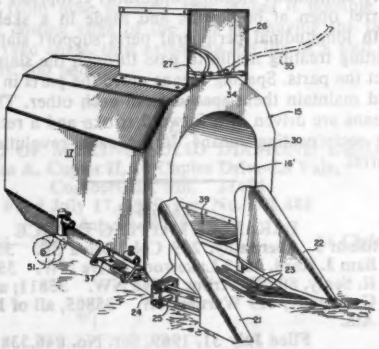
An improved magnetically controlled apparatus is provided which permits the player to control movements of a toy vehicle about the surface of a game board. The toy vehicle is propelled across the surface of the game board from one end of the apparatus to the other by means of a carriage mounted under the game board and magnetically coupled through the board to the vehicle. The carriage is moved under the force of gravity, or by

an appropriate drive mechanism from one end of the housing to the other. As the vehicle is propelled by the carriage, it can be independently steered transversely to



the path of the carriage under the control of a steering wheel which is rotatably mounted on the housing, and which causes a magnetic element on the carriage to move from one side of the carriage to the other.

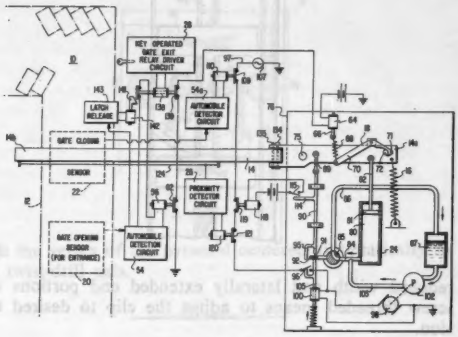
3,626,636
THERMAL PLANT CONDITIONING APPARATUS AND METHOD
Joe R. Wheeler, Leachville, Ark. 72438
Filed July 15, 1969, Ser. No. 841,780
Int. Cl. A01m *15/00*
U.S. Cl. 47—5 **18 Claims**



A mobile oven traverses rows of cotton plants or the like and forms a heating tunnel through which the plants pass. A lower set of laterally opposed burners subject the lower portions of the plants to flame primarily for shocking the plants. Alternatively, an upper set of burners within the hollow wall structure of the oven produce heat without direct flame action for less drastic forms of heat treatment.

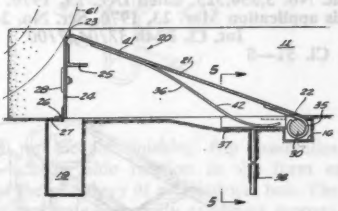
3,626,637
AUTOMATICALLY OPERATED TRAFFIC CONTROL BARRIER
Charles E. Rudicel, Orlando, Fla., assignor of fractional part interest to Robert C. Knarreborg, Orlando, Fla.
Filed Apr. 3, 1967, Ser. No. 627,690
Int. Cl. E05f *15/20*
U.S. Cl. 49—25 **4 Claims**

A gate control system including a first magnetic detector **20** in front of the gate releases a latch **18** holding the gate **14** closed when an automobile approaches, and a second magnetic detector **22** prevents operation of a hydraulic pump motor **98** for closing the gate as long as an automobile is within two feet. Each magnetic detector consists of a vertical magnetic rod **44** buried beneath the roadway with top and bottom coils **46** and **48** subjected to an alternating electric field to induce currents which cancel each other except when an automobile is above the upper coil. A proximity detector **26** including an antenna wire **124**



on the gate prevents gate closure if an object under the gate changes the capacitance of the air gap between gate and roadway.

3,626,638
WRONG-WAY TRAFFIC SAFETY BARRIER
Edward J. W. Lafferty, 1749½ Westmoreland Ave., Los Angeles, Calif. 90006
Filed Aug. 5, 1970, Ser. No. 61,057
Int. Cl. E01f *13/00*
U.S. Cl. 49—49 **10 Claims**

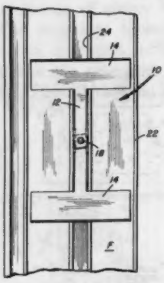


A safety barrier is provided to prevent wrong-way traffic from entering a one-way street. The barrier is formed by one or more metal pans which extend transversely across the roadway. Each pan is hinged to the roadway on its longitudinal side which is first encountered by vehicles moving in the normal direction of traffic flow. Spring means are provided underneath the pan for normally holding the pan in an angled, elevated position. The other, normally elevated longitudinal edge of the pan is provided with a downwardly turned flange which is clearly visible to traffic approaching from the wrong direction, and gives the appearance of a curb.

3,626,639
SPRING LOADED ALIGNMENT CLIP FOR CLOSURE FRAME MEMBERS
Vincent E. Di Lucia, Springfield, Pa., assignor to Bell Specialty Company, Inc., Phhiladelphia, Pa.
Filed June 16, 1970, Ser. No. 46,760
Int. Cl. E06b *1/04*
U.S. Cl. 49—505 **1 Claim**

A spring loaded alignment clip particularly adapted for window frame members to assure plumb line straightness of the frame members during installation and to provide

adjustable sash tension, the said clip comprising a substantially flat leaf spring having an intermediate portion of



reduced width and laterally extended end portions and screw threaded means to adjust the clip to desired tension.

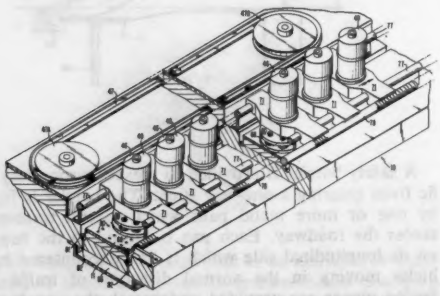
ERRATA

For Classes 51—8 and 51—125 see:
Patent Nos. 3,626,841 and 3,626,842

3,626,640
APPARATUS FOR PROVIDING A FINISHED SURFACE ON WORKPIECES

Fred E. Goetz, Wappingers Falls, Perry R. Druzba, Jr., Poughkeepsie, James R. Hause, La Grangeville, and Gerard Seeley, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Original application Mar. 22, 1968, Ser. No. 715,350, now Pat. No. 3,550,325, dated Dec. 29, 1970. Divided and this application Mar. 23, 1970, Ser. No. 24,932
Int. Cl. B24b *37/04, 7/00*
U.S. Cl. 51—5 **9 Claims**

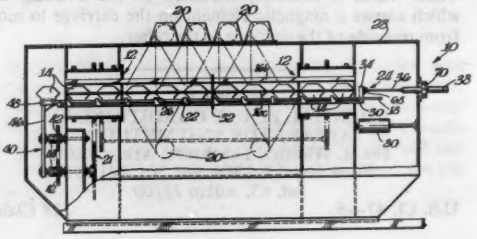


This disclosure includes apparatus for preparing the surface of a workpiece. The disclosure teaches the provision of a novel workpiece carrier for engaging the workpiece, and oscillating the workpiece holder relative to a finishing surface while simultaneously providing relative linear movement between the workpiece holder and the finishing surface. The apparatus includes a carrier having a driver for moving the carrier along a linear path of travel. A rotatable mount which is carried by the carrier includes a depending workpiece receiver which is rotatably connected to the mount, the receiver being mounted eccentrically with respect to the carrier. Structure is provided for imparting rotation to the mount and separate elements such as springs are connected between the receiver and the carrier so as to inhibit rotation of the receiver while permitting oscillation thereof. In this manner, an article being held by the receiver may be engaged and oscillated against the finishing surface in substantially coplanar relationship therewith. In addition, as herein disclosed, the finishing table upon which the carriers ride may be provided with a plurality of finishing surfaces, each adapted for different finishing operations with intermediate cleaning surfaces to clean the workpiece of any residue adhering thereto from a previous finishing surface.

3,626,641
CONTINUOUS CLEANING APPARATUS

George W. Powell, Willard J. Harper, and James H. Carpenter, Jr., Hagerstown, Md., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Aug. 13, 1969, Ser. No. 849,839
Int. Cl. B24c *3/08*
U.S. Cl. 51—15 **25 Claims**

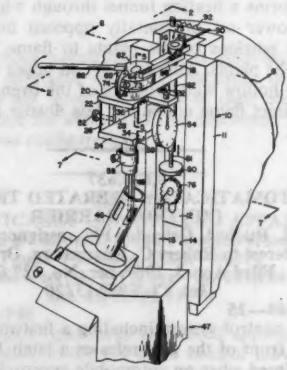


A continuous cleaning apparatus comprises a rotating barrel open at both ends and made in a skeletal form with longitudinal peripheral parts support slats for permitting treating media to pass through the slats and contact the parts. Spacing means move the parts in the barrel and maintain them spaced from each other. The spacing means are driven in a forward stroke and a return stroke by reciprocating means during each revolution of the barrel.

3,626,642
PARALLEL LAPPING DEVICE

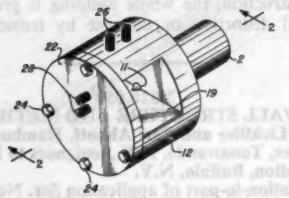
William J. Abernathy, 209 Cole Drive SE. 35802; William J. Reed, 3613 Lakewood Drive NW. 35810; John R. Sealy, 805 W. Arbor Drive NW. 35811; and Lowell G. Snoddy, 419 Warner NW. 35805, all of Huntsville, Ala.

Filed July 31, 1969, Ser. No. 846,338
Int. Cl. B24b *7/00*
U.S. Cl. 51—57 **10 Claims**



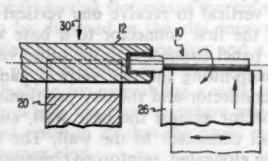
A lapping machine wherein a lapping tool is supported by a parallelopiped structure which maintains a desired linear and parallel lapping force on the entire surface being lapped and during the entire lapping operation.

3,626,643
TOOL GRINDING ATTACHMENT
Albert F. Kirchgessner, 2306 Betty Elyse Lane, Phoenix, Ariz. 85022
Filed Dec. 15, 1969, Ser. No. 885,212
Int. Cl. B24b 19/00
U.S. Cl. 51—218 2 Claims



A grinding attachment for cutting tools used in a standard metal-turning machine. The device includes a shank adapted to fit a collet in a standard tool and cutter machine. A shoulder is integrally formed with the shank and the shoulder has means for positioning a rectangular shaped tool within the aperture in the shoulder and holding the tool in place to a very close tolerance. Because of the unique attitude of the tool in respect to the position of the grinder, the shape of the tool follows the arc of the circle from nose to heel. This makes it possible to renew the cutting edge of the tool by shaving the face along the rake angle, thus extending the life of a tool by as much as 500 percent.

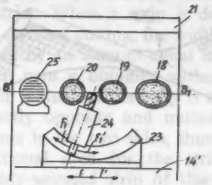
3,626,644
METHOD OF MAKING SOLID DIAMOND DRILLS
John A. Cupler II, 10 Cupler Drive-La Vale, Cumberland, Md. 21401
Filed July 17, 1969, Ser. No. 842,488
Int. Cl. B24b 1/00
U.S. Cl. 51—288 14 Claims



A method of machining solid drills wherein such drills are machined without regard to natural cleavage lines. The drills are machined to a desired three-dimensional configuration by providing a yieldable engagement of the diamond with an endless machining member in accordance with the surfaces which are to be machined.

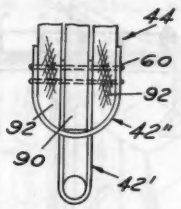
3,626,645
METHOD OF SHARPENING TWIST DRILLS
Claude Rochet, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt, France
Filed Oct. 10, 1969, Ser. No. 865,299
Claims priority, application France, Oct. 18, 1968, 170,457
Int. Cl. B24b 1/00
U.S. Cl. 51—288 4 Claims

Method of sharpening twist-drills having a point comprising at least two symmetric lips each formed with a cutting edge, characterized in that the twist-drill point is ground to impart a pyramidal configuration thereto



with the vertex of the pyramid centered automatically to the twist-drill axis.

3,626,646
FINISHING FLAP ASSEMBLY
James A. Belanger, Livonia, Mich., assignor to Belanger, Inc., Northville, Mich.
Filed Sept. 15, 1969, Ser. No. 857,885
Int. Cl. B24b 9/02
U.S. Cl. 51—337 2 Claims

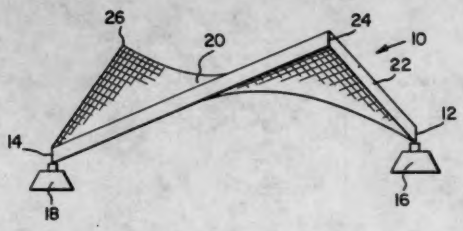


The novel replaceable finishing flap assemblies are arranged in side by side relation in the form of an annulus about the periphery of a cylindrical hub. The hub is provided with circumferentially extending grooves into which the inner ends of the finishing flap assemblies are inserted to form a finishing wheel or tool. Such assemblies are pivotally connected to the hub and are adapted to pivot through a small predetermined angular movement to help maintain the wheel or tool in proper balance. The finishing flap assembly is provided with an elongated hinge type retainer having a plurality of longitudinally spaced notches in one edge thereof which are separated by hinge type sockets, the latter being adapted to extend into the grooves of the hub and form pivot mountings for a pin carried by the hub. The assembly further includes a pack of flexible material extending outwardly from the retainer and having an end portion secured to the retainer by means of staples or other type of fastening elements.

3,626,647
CURVED ROOF SUPPORT STRUCTURE
Harry L. Guzelimian, 154 Nardo Ave., Solana Beach, Calif. 92075
Filed July 20, 1970, Ser. No. 56,441
Int. Cl. E04b 1/32
U.S. Cl. 52—80 9 Claims

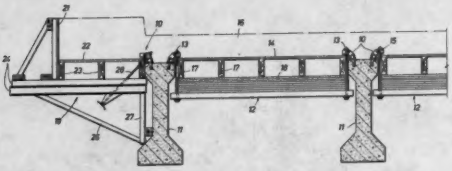
A roof support structure is formed with a plurality of individual members in two groups of parallel members. Members in the first group are generally perpendicular

with members in the second group and the two groups are notched to provide interfitted intersections in a unitary



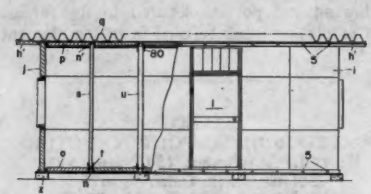
assembly. Anchors hold opposite portions downward and inward to form a curved roof support structure.

3,626,648
BRIDGE DECK FORM HANGER
Joe W. Beckham, Lufkin, Tex., assignor to Texas Foundries, Inc., Lufkin, Tex.
Filed Aug. 21, 1969, Ser. No. 851,985
Int. Cl. E04b *1/00*
U.S. Cl. 52—127 **2 Claims**



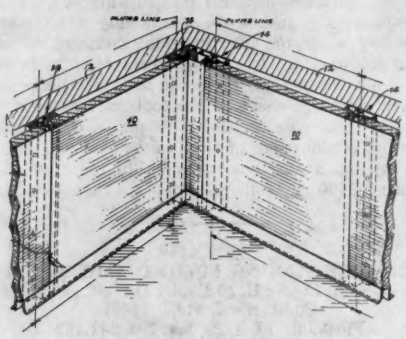
A bridge deck form hanger for suspending deck forms from concrete bridge girders so that a concrete deck can be poured. The hanger has a lower end portion adapted to be embedded in the top surface of a girder and an upper end portion which extends over the edge of the girder to interconnect with the bridge deck form to secure the form in its proper position with respect to the girders.

3,626,649
PREFABRICATED HOUSE
Yoshiro Ohkawa, 2–2–6–404 Asahigaoka, Kiyosemachi, Kitalamagun, Tokyo, Japan
Filed July 17, 1970, Ser. No. 55,646
Claims priority, application Japan, Apr. 9, 1970, 45/33,656
Int. Cl. E06b *1/04*
U.S. Cl. 52—204 **12 Claims**



This invention provides a prefabricated house, which is earthquake-proof, strong against wind, durable, comportable, and inexpensive. The house can be built easily in a short time by any person by assembling specific ready made parts, such as panels with steel sheet or aluminum for an outer covering and isocyanate foam material with leather cloth of selected color bonded thereto for an inner covering and channel and angle steel members used in combination as a groundsill and a top rail. After assembly, the rooms of the house are kept airtight, coldproof, and cooler, and furthermore, by reason of the panel construction, the whole building is protected from any partial distortion or collapse by tension and compression.

3,626,650
WALL STRUCTURE AND METHOD
Robert P. Lickliter and Earl Abbott, Hamburg, and John F. Reeves, Tonawanda, N.Y., assignors to Flangeklamp Corporation, Buffalo, N.Y.
Continuation-in-part of application Ser. No. 703,955, Feb. 8, 1968. This application Sept. 3, 1968, Ser. No. 756,853
Int. Cl. E04b *1/38*; E04c *3/32*
U.S. Cl. 52—288 **8 Claims**

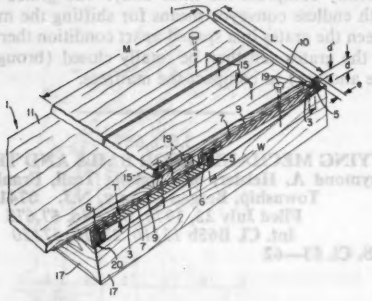


A method of paneling a wall by plumbing a first panel connector true vertical to receive one vertical edge of a panel, securing the first connector to a base wall, snap-fitting a second panel connector to the other vertical edge of the panel, snap-fitting the one vertical panel edge to the first panel connector and thereby positioning the second panel connector against the base wall, and securing the second panel connector to the wall. The panel connectors are of an elongated, reinforced construction which can extend substantially the full height of the panel members and are provided with openings for receiving fastening means therethrough into the wall. Connector-splicers are provided for spaced-apart panel connectors and have fastener-receiving means. Corner trim connectors cover the exposed inner and outer corners of the base wall.

3,626,651
PANEL FOR SURFACING BUILDINGS
John K. Kough, Rte. 2, Box 62, Morgan Hill, Calif. 95037; Otis M. Martin, 321 Grey Ghost Ave., San Jose, Calif. 95111; and Silas N. Miller, 5300 Kittridge Road, Saratoga, Calif. 95070
Filed Aug. 7, 1969, Ser. No. 856,236
Int. Cl. E04d *1/20, 1/26, 1/28*
U.S. Cl. 52—536 **1 Claim**

A prefabricated enclosure panel, a plurality of which may be used to surface roofs or sides of buildings. The panels are designed with a sheathing member attached to longitudinal guide strips for interlocking with a vertical positioned panel. The sheathing member and guide

strips may further carry angled abutting ends for interlocking with a horizontally positioned panel. A waterproofing membrane plus shingles, shakes or other surfacing material may be secured to the sheathing member.



3,626,652

BUILDING AND WALL STRUCTURE AND THE LIKE AND CONNECTING MEANS THEREFOR

William John Hanley, Nassau, New Providence, Bahamas

Filed Jan. 5, 1970, Ser. No. 598
Int. Cl. E04b *1/48*
U.S. Cl. 52—584 12 Claims

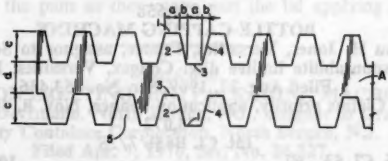
A panel structure comprising a plurality of individual panel members having slot means therein with cleat means adapted to be disposed in the slot means with the cleat means having an unlocked position and a locked position so that the panel members may be quickly jonied together in a rigid fashion for assembling a wall, container, or the like, and in which the cleat members may be disposed in an unlocked position so that the panel members may be quickly disassembled.

3,626,653

BISERRATED FRAMING MEMBER

Arsham Amirikian, 6526 Western Ave., Chevy Chase, Md. 20015

Filed Nov. 18, 1969, Ser. No. 877,610
Int. Cl. E04c *3/30*
U.S. Cl. 52—734 1 Claim



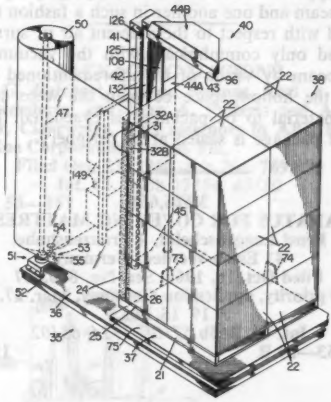
The method of increasing the depth of a rolled I- or channel beam, by first cutting the web on a single sinuous or serrated line then welding together the two resulting segments at their projecting edges, is a well-known and practiced art in fabrication. In this invention that principle is extended to a more profitable application in the form of serrating a strip of plate along both of its two longitudinal boundaries. When a strip is double cut from a large plate, by serrated cutting, the width of a straight-cut strip is increased by an amount equal to the depth of the serration, which gain is obtained without an increase in weight. Another feature of the strip is that the serrations consist of directly opposite and mutually parallel pairs of edge segments in the two sides, thus providing a constant cross-sectional area for the strip throughout its length. A doubly-serrated strip of this type, when used either in flat or bent form, serves as the basic element for building a number of new framing members of great structural efficiency and economic merit.

3,626,654

METHOD OF OVERWRAPPING A PACKAGE

William B. Hoffler, Henrico County, and Thomas E. Kirby, Jr., Chesterfield County, Va., assignors to Reynolds Metals Company, Richmond, Va.

Original application Apr. 17, 1968, Ser. No. 722,010, now Pat. No. 3,514,920, dated June 2, 1970. Divided and this application Mar. 16, 1970, Ser. No. 19,795
Int. Cl. B65b *11/30, 35/30*
U.S. Cl. 53—26 21 Claims



This disclosure relates to an overwrapped package comprised of a pallet and one or more containers supported on such pallet and the pallet and containers have a film of plastic heat shrunk therearound to provide a unitary package which is easy to handle and transport. This disclosure also relates to an improved apparatus for and method of providing such a package.

3,626,655

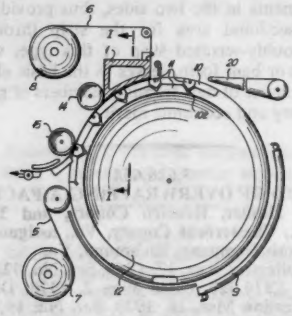
METHOD FOR THE CONTINUOUS MANUFACTURE OF EVACUATED PACKAGES AND APPARATUS FOR CARRYING OUT THE AFOREMENTIONED METHOD

Paul Eitel, Reiden, Switzerland, assignor to Tourpac AG, Zug, Switzerland

Filed June 2, 1970, Ser. No. 42,779
Claims priority, application Switzerland, June 19, 1969, 9,363/69
Int. Cl. B65b *31/02*
U.S. Cl. 53—22 A 20 Claims

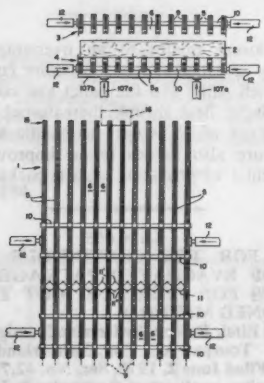
A method and apparatus for the continuous evacuation and sealing of successively filled packages formed of two foil webs sealed at their periphery with one another and

between which there is contained the package fill. According to the invention, the lower web is filled at spaced locations along its length with the material to be packaged and is guided beneath the upper web. The upper web moves past a vacuum beam and by virtue of the vacuum prevailing thereat is raised into a depression or cavity of such vacuum beam. As a result an opening is formed between the lower and the upper webs through which the vacuum acts upon the surroundings of the material to be



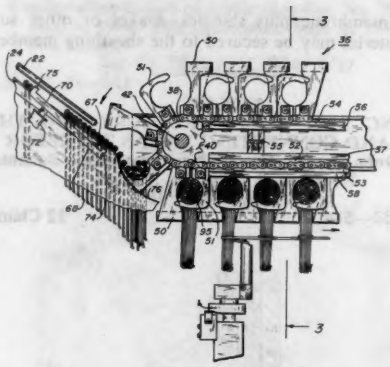
packaged. Furthermore, due to the existence of the vacuum the upper and lower webs are pressed against the vacuum beam and one another in such a fashion that they are sealed with respect to the ambient air or surrounding region and only communicate with the vacuum of the vacuum beam by virtue of the aforementioned opening, whereby the hollow space between the webs surrounding the material to be packaged is evacuated. Then the evacuated package is sealed at its periphery.

3,626,656
APPARATUS FOR COVERING MATTRESSES
Ernst Langenscheidt, 4 Franzenshohe, 43 Essen-Werden, Germany
Filed Oct. 16, 1969, Ser. No. 866,827
Claims priority, application Germany, Mar. 27, 1969, P 19 15 805.5
Int. Cl. B65b *57/08, 1/24, 63/02*
U.S. Cl. 53—59 R **11 Claims**



An apparatus for covering mattresses wherein one of two spaced-apart, mutually parallel generally horizontal transport grates is vertically shiftable relative to the other so that the entire mattress strucure can be compressed between the grates. The grates are composed of planar arrays of transversely spaced, mutually parallel grate bars and means is provided to vary the bar spacing of each grate to accommodate mattress structures of various widths and laterally compress the filter body. The grates co-operate with endless conveyor means for shifting the mattress between the grates in a spaced-apart condition thereof whereby the grates can then be totally closed (brought toward one another) to compact the mattress.

3,626,657
TYING MECHANISM FOR BAILS AND THE LIKE
Raymond A. Heisler, 657 Dakota Trail, Franklin Lakes Township, Bergen County, N.J. 07417
Filed July 23, 1970, Ser. No. 57,675
Int. Cl. B65b *13/10, 27/10, 57/20*
U.S. Cl. 53—62 **28 Claims**

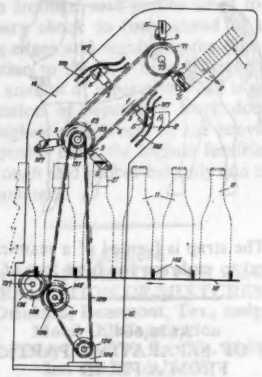


An automatic collating and tying mechanism adapted for receiving wire bails and the like is disposed to receive a determined accumulation of bails and the like and with the delivery thereof, an actuation is made of the tying and transporting mechanism of this invention. The accumulation of these bails is provided by a downwardly sloped gravity fed chute and after a determined number of bails has been delivered to the chute a gate release is actuated to permit this accumulated number of bails to be discharged to a grouping means provided by the conveyor mechanism. These bails are clamped in a determined circumferential configuration and after clamping are fed by means of an intermittently actuated mechanism to a later station whereat a tying apparatus is actuated to cause strips of adhesive tape to be applied for a plurality of turns around the bundled grouping of wires. After the tape is applied the bundles are intermittently advanced to the end of the conveying mechanism where a pair of cutters is actuated each adapted to cut a strip of tape. At the delivery end of the conveying mechanism the grouping means is caused to be opened to deliver the tied bails to a container or the like. In an alternate embodiment twisted wire is used to tie the groupings of bails.

3,626,658
BOTTLE-CAPPING MACHINE
Leon H. Jones, Versailles, France, assignor to Société a responsabilite limitee dite: Congex, Versailles, France
Filed Aug. 27, 1969, Ser. No. 853,436
Claims priority, application France, Nov. 8, 1968, 173,072
Int. Cl. B65b *7/28*
U.S. Cl. 53—67 **10 Claims**

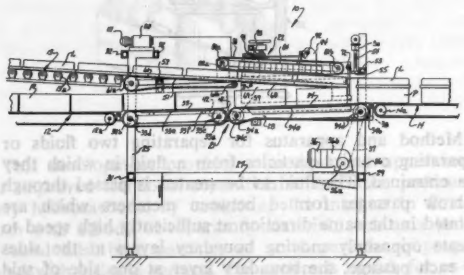
A bottle-capping machine having a horizontal conveyor for supporting and moving upright bottles. An endless chain has upper and lower reaches above and

inclined with respect to said conveyor. A cap magazine is located near the upper end of the lower reach. Jaws



are mounted at intervals along the chain and are caused to engage one cap and place it upon a bottle as the bottles are moved continuously by the conveyor.

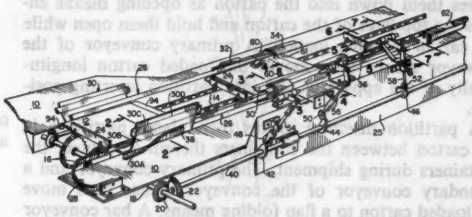
3,626,659
APPARATUS FOR APPLYING LIDS TO PANS
Johnnie J. Breitbach, Rockford, Ill.
(11 Hawthorne Drive, Normal, Ill. 61761)
Filed June 12, 1970, Ser. No. 45,752
Int. Cl. B65b *57/02, 7/28*
U.S. Cl. 53—71 **18 Claims**



An apparatus for applying magnetizable lids to pans as the latter are advanced by a pan conveyor past a lid applying station. The lids are advanced to the lid applying station by a lid conveyor assembly having a first endless type conveyor that underlies the lids, and a second magnetic endless conveyor that overlies the lids. The lid conveyors are selectively driven in a direction to advance lids to the lid applying station and are then braked to stop and hold the lids in position until a pan is advanced to the lid applying station. The pan conveyor includes an inlet section and an outlet section for advancing the pans past the lid applying station and the outlet section is driven at a speed higher than the inlet section to effect separation of the pans as they move past the lid applying station.

3,626,660
CARTON ERECTING AND PACKAGING MACHINE
Oskar Dorfmann, North Bergen, N.J., assignor to Grand-City Container Corporation, North Bergen, N.J.
Filed Apr. 7, 1970, Ser. No. 26,227
Int. Cl. B65b *11/18, 25/14, 61/00*
U.S. Cl. 53—183 **24 Claims**

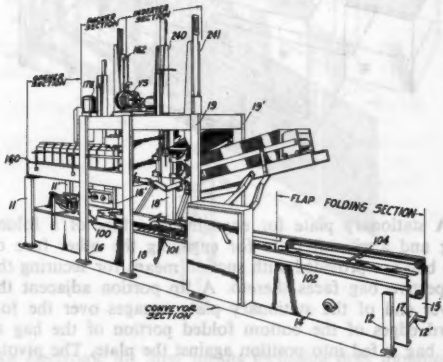
An automatic carton erecting and packaging machine is described. Tubular bumpers are automatically formed on a carton blank by folding the blank's side flaps over a forming bar by a series of roll-over cams. The newly formed bumpers are then spread apart for the insertion of the article to be packaged into the partially erected carton. When operating with a double (two part) blank carton, the filled carton and its cover are simultaneously conveyed into engagement for the final gluing and closing



operation. When operating with a single blank carton, a curved plough closes the carton cover as it is conveyed to the final gluing and closing operation.

In an alternate embodiment, a contoured flight which conveys the carton blank through the bumper forming operation also engages the article to be packaged and inserts it into proper position in the carton blank.

3,626,661
PACKAGING MACHINE
Donald G. Reichert, Tarpon Springs, Earl A. Petrikin, St. Petersburg, and John A. Pasteris and Arthur W. Bluder, Clearwater, Fla., assignors to ABC Packaging Machine Corporation, Largo, Fla.
Filed Oct. 23, 1968, Ser. No. 769,876
Int. Cl. B65b *25/54, 43/30*
U.S. Cl. 53—157 **8 Claims**



A method and apparatus for receiving cartons in a flat, collapsed or folded condition; setting these cartons up in an open condition; folding some of the flaps of the carton; loading containers into the carton; inserting partitions between the containers in the carton; and, subsequently folding the unfolded bottom flaps of the carton for sealing.

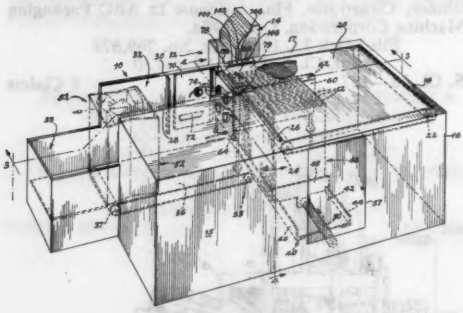
The apparatus includes a carton magazine which receives the flat, collapsed cartons in an ordered arrangement. A stripping means moves cartons from the ordered arrangement one at a time substantially parallel to the side panels thereof and into engagement with opposed,

relatively movable suction means. The suction means are moved away from each other to set up the carton in an open condition. A pusher means of a conveyor means then engages and moves the opened carton longitudinally of the machine to a loading position while closing two of the bottom flaps thereof.

An infeed conveyor receives containers in an ordered arrangement and disposes them over the opened carton when it is in the loading position. A loading suction means engages the containers to be loaded into the carton and moves them down into the carton as opening means engage the top flaps of the carton and hold them open while the carton is being loaded. A primary conveyor of the conveyor means then moves the loaded carton longitudinally of the apparatus and into partition inserting position.

A partition inserting means then places partitions in the carton between the containers therein to protect the containers during shipment. The primary conveyor and a secondary conveyor of the conveyor means then move the loaded carton to a flap folding means. A bar conveyor of the conveyor means moves the carton through the flap folding means to fold the unfolded bottom flaps of the carton for final sealing of the carton.

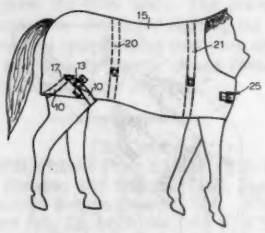
3,626,662
BAG OPENING APPARATUS
Oscar W. Graveley, Sanborn, N.Y., assignor to Niagara Frontier Services, Inc., Buffalo, N.Y.
Filed Jan. 14, 1970, Ser. No. 2,784
Int. Cl. B65b *43/30*
U.S. Cl. 53—188 **11 Claims**



A stationary plate for engaging one face of a folded bag and a pivotal plate for engaging the other face of the bag are provided with suction means for securing the respective bag faces thereto. A lip portion adjacent the lower end of the stationary plate engages over the forward edges of the bottom folded portion of the bag as the bag is fed into position against the plate. The pivotal plate is swung away from the stationary plate to spread the opposite faces of the bag apart and the bottom folded portion of the bag is cammed beneath the lip to completely open the bag.

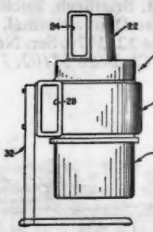
3,626,663
BLANKET FOR HORSES AND THE LIKE
Jacob R. Moon, St. Mary's Road, Box 642, Hillsborough, N.C. 27278
Filed July 24, 1970, Ser. No. 57,925
Int. Cl. B68c *5/00*
U.S. Cl. 54—79 **5 Claims**

A conventional horse blanket is modified by the elimination of the conventional non-stretchable body cinches and the substitution of a single stretchable strap slidably mounted in grommets placed in the lower rear portions



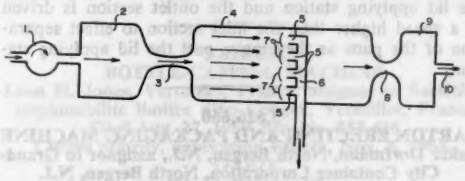
of the blanket. The strap is formed of a seamless, stretchable tube adapted to embrace the hind legs of the horse.

3,626,664
METHOD OF SEPARATING PARTICLES FROM A FLUID
Bo Nilsson Hoffstrom, deceased, late of Santa Monica, Calif., by Maruja Hoffstrom, administratrix, Santa Monica, Calif., assignor to McDonnell Douglass Corporation, Santa Monica, Calif.
Continuation of application Ser. No. 459,704, May 28, 1965. This application Apr. 1, 1969, Ser. No. 837,001
Int. Cl. B01d *37/00, 45/00*
U.S. Cl. 55—1 **2 Claims**



Method and apparatus for separating two fluids or separating oversize particles from a fluid in which they are entrained. The fluid to be treated is passed through narrow passages formed between members which are rotated in the same direction at sufficiently high speed to create oppositely moving boundary layers at the sides of each passage, the boundary layer at one side of said passage entraining oversize particles or the fluid to prevent the travel of the fluid or oversize particles through the passages.

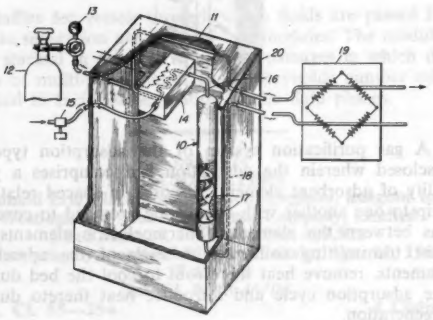
3,626,665
PROCESS FOR SEPARATING URANIUM ISOTOPES
John B. Fenn, Branford, Conn., and James R. White, Princeton, N.J., assignors to Mobil Oil Corporation
Filed Aug. 29, 1969, Ser. No. 854,245
Int. Cl. B01d *57/00*
U.S. Cl. 55—17 **6 Claims**



Uranium isotopes can be separated utilizing shock separation techniques by introducing gaseous uranium hexafluoride, alone or in admixture with inert gaseous diluents,

at supersonic velocity into a duct such that parallel flow streamlines are present; placing within the supersonic parallel flow stream a plurality of hollow probes having critical dimensions relative to the mean free path of said flow stream in front of said probes so as to cause a detached stationary shock to form ahead of each of said probes leading edges and regulating the flow through the probes in relation to the flow through the duct such that the maximum amount of separative work is accomplished. This maximization of separative work does not occur either at the highest enrichment of the heavier isotope in the sampling probes or at the highest feasible withdrawal rate of gas through said probes but only at a narrow range of critical parameters.

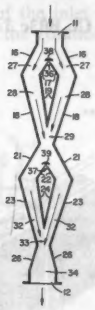
3,626,666
METHOD AND APPARATUS FOR FRACTIONAL SEPARATION OF MIXTURES
B. M. Drinkard, Beaumont, Tex., assignor to Mobil Oil Corporation
Filed May 18, 1970, Ser. No. 38,091
Int. Cl. B01d *15/08*
U.S. Cl. 55—67 **9 Claims**



This development provides a method and apparatus for improved fractional separation of mixtures, particularly hydrocarbons, by contacting the mixture in fluid form with a body of separatory material, such as a bed of solid adsorbent particles or solid particles impregnated with a liquid sorbent. The system is useful, for example in separation of organic compounds which have closely similar boiling points. The body of adsorbent is disposed along a compact path wherein are disposed diverting and dividing elements of such form and arrangement that a substantially constant cross section of the adsorbent bed is maintained along the path of contact.

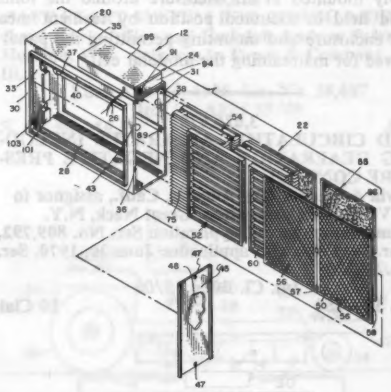
3,626,667
SCRUBBING METHOD AND APPARATUS
Ernest Mare, Johannesburg, Transvaal, Republic of South Africa, assignor to J. Ronald Hershberger, Palo Alto, Calif.
Filed Jan. 6, 1970, Ser. No. 869
Int. Cl. B01d *47/06*
U.S. Cl. 55—95 **3 Claims**

Gas scrubbing method and apparatus usable where it is desired to obtain intermixing of liquid droplets and a gas. For example, it may be used for gas scrubbing, blending, quenching, absorption, heat exchange, chemical reactions and the like. A gas stream to be treated is split into at least two separate streams which are first diverging and then caused to converge. The two streams are then brought together in a turbulent mixing zone. The scrubbing liquor is introduced into the two streams before they are intermingled whereby the liquor is thoroughly intermixed with the gas in the turbulent mixing zone. The flow paths leading to the zone of mixing are of decreasing cross sectional flow area to provide increasing flow



velocities. Generally it is desirable to employ two or more such scrubbing stages. The equipment employs casing means which forms ducts for the flow paths and which has a means for introducing the scrubbing liquor.

3,626,668
ELECTRONIC AIR FILTER MEANS
George H. Cardiff, P.O. Box 1138, Wichita, Kans. 67201
Filed May 19, 1969, Ser. No. 825,732
Int. Cl. B03c *3/01*
U.S. Cl. 55—126 **3 Claims**



An electronic air filter means including duct mounted air filter structures and wall mounted air filter structures, each adapted to receive air flow through a pre-filter assembly; a plurality of ionizer assemblies; particle collector means; after-filter agglomerator assembly; and utilizing control means to provide power for the proper charging of foreign particles within the air for removing the same on passage therethrough. More particularly, disclosed is an air filtering means having modular electrostatic precipitator means operable to separate foreign particles from a given air flow therethrough, the precipitator means having ionizer units and particle collector units readily removable for service and maintenance with a minimum amount of time and effort required.

3,626,669

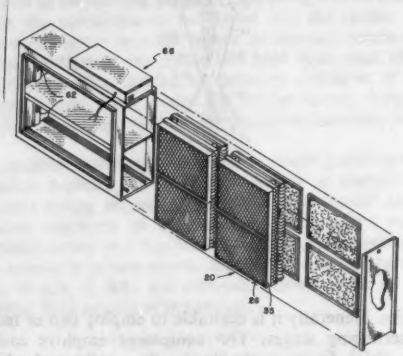
ELECTROSTATIC AIR FILTERING MEANS

George H. Cardiff, 725 E. 37th St. N., Wichita, Kans. 67219

Continuation-in-part of application Ser. No. 825,732, May 19, 1969. This application Nov. 3, 1969, Ser. No. 873,527

Int. Cl. B03c *3/01*

U.S. Cl. 55—126 3 Claims



An electrostatic air filtering unit is adapted to be used in an air filter. The modular structural cell has an outer pre-filter panel, an inner particle collector area and an ionizer area therebetween. Alternately chargeable and groundable plate members in the particle collector area form passageways for air to be filtered, and collect charged particles in the air during operation. Chargeable filaments are in the ionizer area, and during operation charge the particles to be removed from the air as they pass through the ionizer area. The pre-filter panel is easily removably mounted in an enclosure around the ionizer area, and held in mounted position by resilient means with the enclosure and mounting permitting the panel to be removed for maintaining the modular cell.

3,626,670

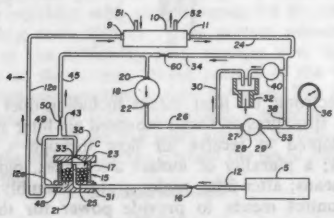
FLUID CIRCULATION APPARATUS INCLUDING DEAERATION AND NEGATIVE PRESSURE CONTROL

Edwin A. Pecker, Los Angeles, Calif., assignor to Vernitron Corporation, Great Neck, N.Y.

Continuation-in-part of application Ser. No. 809,792, Mar. 24, 1969. This application June 30, 1970, Ser. No. 52,220

Int. Cl. B01d *19/00*

U.S. Cl. 55—159 10 Claims



A fluid circulation system includes a suction pump and valve controlled recirculating loop for adjustably maintaining fluid pressure within a specified range at the pump, with a deaerator disposed in a fluid supply line to continuously remove air from the fluid and to pass it via a bleed line to the pump. A fluid flow restrictor in the recirculating loop maintains a pressure differential between the pump and the fluid supply source. Two stages of deaeration may be provided as well as a restrictor in the bleed line to limit passage of fluid through the bleed line.

3,626,671

ADSORBER ELEMENT AND TEMPERATURE CONTROLLED ADSORBER PURIFICATION SYSTEM

Robert W. Ebeling, Jr., Maxatawny, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 2, 1969, Ser. No. 821,182

Int. Cl. B01d *53/00*

U.S. Cl. 55—179 8 Claims

A gas purification system of the adsorption type is disclosed wherein the adsorption bed comprises a plurality of adsorbent elements disposed in spaced relationship to one another with channeling provided to conduct gas between the elements. Thermoelectric elements, in heat transmitting contact with each of the adsorbent elements, remove heat therefrom to cool the bed during the adsorption cycle and introduce heat thereto during regeneration.

3,626,672

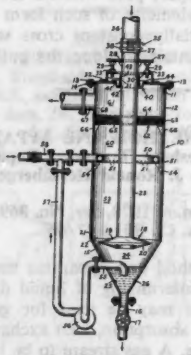
GAS SCRUBBER APPARATUS

Harrison Griffin Burbidge, Lachine, Quebec, Canada, assignor to Amercoat Corp., Brea, Calif.

Continuation of application Ser. No. 528,302, Feb. 17, 1966. This application Apr. 14, 1969, Ser. No. 817,269

Int. Cl. B01d *19/00*

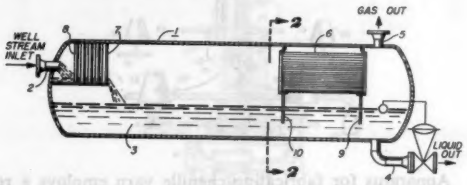
U.S. Cl. 55—185 3 Claims



A gas scrubbing device which includes means for spraying liquid downward within the device, means for introducing gas so that it flows upward in the device and is scrubbed by the liquid, and a disk valve adapted to form

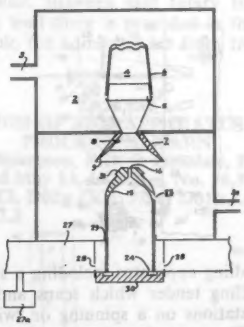
with an internal tapered wall portion of the device an orifice through which the gas flows upward, the disk valve being movable relative to the tapered wall portion by means outside the device to vary the effective size of the orifice, which in turn regulates gas flow within the device for maximum dispersion and hence maximum scrubbing efficiency.

3,626,673
MEANS FOR SEPARATING FLUIDS
King E. Stockton and Robert W. Coggins, Tulsa, Okla., assignors to Combustion Engineering, Inc., New York, N.Y.
Filed Oct. 26, 1970, Ser. No. 83,836
Int. Cl. B01d *57/00*
U.S. Cl. 55—199 **5 Claims**



Baffles for vessels through which fluids are passed for phase separation are grouped into modules. The modules are stacked in a vessel to provide passages in which the flow of multi-phasic fluids has its Reynolds number controlled to facilitate separation of the fluid phases.

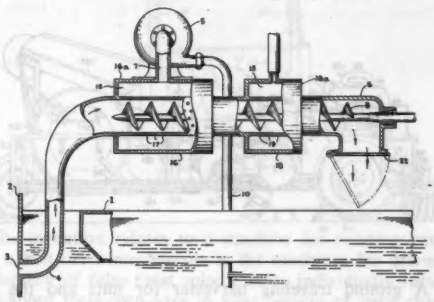
3,626,674
FLUID FILTERS
Donald Eric Blackmore, London, England, assignor to Westinghouse Brake and Signal Company, Limited
Filed Mar. 24, 1969, Ser. No. 809,826
Claims priority, application Great Britain, Apr. 11, 1968, 17,438/68
Int. Cl. B01d *46/04*
U.S. Cl. 55—294 **4 Claims**



A gas filter provided with a cleaning nozzle which reciprocates between a dividing means and a supply conduit has been inserted.

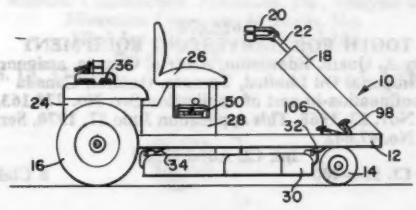
3,626,675
WEED PUMP
Merle P. Chaplin, 609 Driver Ave., Winter Park, Fla. 32789
Filed Nov. 10, 1969, Ser. No. 875,297
Int. Cl. A01d *45/08*
U.S. Cl. 56—9 **15 Claims**

A new and improved device suitable for employment adjacent the front end of a barge or other vessel concerned with removing weeds or other marine growths from lakes, rivers or other bodies of water. Screw conveyor means are used in concert with suction means, the latter enabling the weeds to be removed from an underwater location to the location at which the screw conveyor completes the removal operation. Other facets of this invention include cutoff means disposed at an underwater location ahead of the inlet to the screw conveyor, means for controlling the rotational speed of the screw



conveyor, and a novel piping arrangement whereby suction or pressure may be selectively applied to certain chambers disposed along the length of the tubular structure associated with the screw conveyor. These piping arrangements also make it possible for certain cleaning operations to be carried out on occasion, so as to backwash the weeds from certain of the chambers, and for other purposes later described.

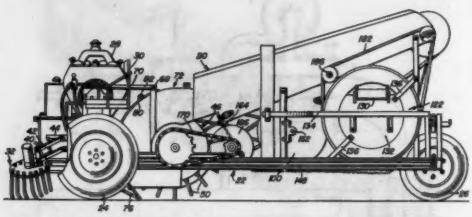
3,626,676
SAFE START SYSTEM FOR RIDING MOWERS
Richard Erwin Miley and Rudolph Andrew Peterson, Jr., Horicon, Wis., assignors to Deere & Company, Moline, Ill.
Filed Apr. 15, 1970, Ser. No. 28,607
Int. Cl. A01d *35/08*
U.S. Cl. 56—10.5 **4 Claims**



A safe start electrical system prevents a recoil rope start engine on a riding mower from starting unless the mower is disengaged and the vehicle drive disengaged. The system is based on a switch that is closed when the engine is being started and is opened by the starter rope when the starter rope is recoiled. The switch is connected to the engine ignition system and is connected in series with two additional switches which are also connected to the chassis of the vehicle. One of the additional switches is responsive to the condition of the clutch for the vehicle drive and is closed when the vehicle drive is enaged. The second additional switch is responsive to the condition of the clutch for the mower and is closed whenever the mower

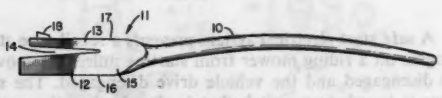
clutch is engaged. The safe start electrical system grounds the engine ignition system if an attempt is made to start the engine while either the vehicle clutch or mower clutch is engaged.

3,626,677
MECHANICAL HARVESTER
Wilmot L. Sides, Rte. 2, Box 42, Goldthwaite, Tex. 76844
Filed Oct. 14, 1969, Ser. No. 866,257
Int. Cl. A01d *51/00*
U.S. Cl. 56—328 **39 Claims**



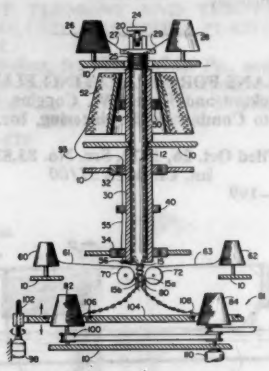
A ground traveling harvester for nuts and the like comprising a full width pickup unit including an elongated drum mounting pickup fingers, and an overlying adjustable hood which cooperates with the fingers in the raising and rearward discharging of the nuts. The raised nuts are deposited on an upwardly and rearwardly traveling chain belt. A second chain belt travels under the lower portion of the first chain belt and retains the nuts for traveling movement by the first chain belt while allowing trash and the like to drop therethrough for discharge on the ground. Continued travel of the first chain belt beyond the second chain belt results in a dropping of the gathered nuts through the first chain belt onto a panel which directs the nuts to a cross conveyor. A trash dislodging fan discharges through the second portion of the first chain belt. The conveyor feeds the nuts to one end of a rotating screen drum for a more complete separation of the trash from the nuts. Subsequent to a travel of the nuts through the screen drum, the nuts are elevated by a rotating elevator for deposit in an outlet spout or chute which effects a lateral discharge of the cleaned nuts from the machine.

3,626,678
TOOTH FOR HARVESTING EQUIPMENT
Henry A. Quam, Edmonton, Alberta, Canada, assignor to Imperial Oil Limited, Toronto, Ontario, Canada
Continuation-in-part of application Ser. No. 778,163, Nov. 22, 1968. This application June 17, 1970, Ser. No. 47,042
Int. Cl. A01d *77/00*
U.S. Cl. 56—400 **8 Claims**



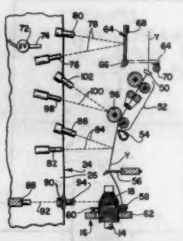
A one-piece tooth for use in harvesting pickup equipment wherein the base of the tooth is integral with the tine portion of the tooth; the base is also laterally resilient and deformable so as to snap into position on the pickup without the need for bolts, screws or other mechanical fastening devices. The bat or other tooth support means on the pickup is adapted to receive the base of the tooth in a releasable locking relationship.

3,626,679
CHENILLE YARN FABRICATING APPARATUS
Imre Meir Schwartz, 566 Broadway, Paterson, N.J. 07514
Filed Oct. 30, 1969, Ser. No. 872,640
Int. Cl. D02g *3/42*
U.S. Cl. 57—24 **7 Claims**



Apparatus for fabricating chenille yarn employs a reciprocating inner die having at least one yarn cord passing therethrough. An outer guide rotates about the inner guide and continuously wraps a fill thread therearound, the formed fill loops being periodically severed by a cam actuated knife element. Take-up apparatus is provided to twist two chenille yarn cords during a collection operation, with the twisted cords forming loops which entrap the severed, half-turn fill loops.

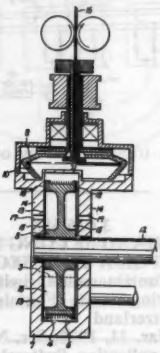
3,626,680
STRAND HANDLING APPARATUS
William R. Whitney, Cranston, R.I., assignor to Leesona Corporation, Warwick, R.I.
Filed Dec. 15, 1969, Ser. No. 884,960
Int. Cl. D01h *13/26*
U.S. Cl. 57—34 R **11 Claims**



Strand handling apparatus including a system for controlling a cycling tender which scans and services bobbin winding stations on a spinning or twisting machine, or the like. The control system provides a signal indicating when a station being scanned is operational and a service signal when the station requires servicing. Upon receipt of both of these signals the control system initiates a work cycle of the tender to service the station. The service signal is provided either when the bobbin at the scanned station is ready to be doffed or when there is an interruption in the advancing strand to the bobbin. If there are more than a predetermined number of such interruption signals during a cycle, this signal is rendered ineffective by the control system to cause servicing of the station. If a roll-wrap occurs on a drafting roll, an indicator which cooperates in providing the operational signal is moved to a non-operational position so that this signal is not provided and thereafter

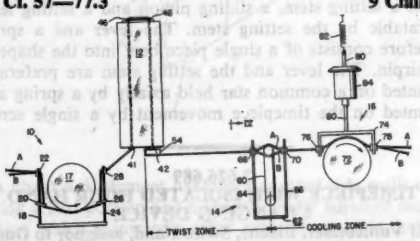
the tender by-passes only the particular station until the station is again placed in operational condition, as by an attendant. When the indicator is moved to its non-operational position it causes the strand to be broken prior to entering drafting rolls of the station.

3,626,681
RINGLESS SPINNING MACHINE
Toshiichi Naruse, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho and Daiwa Boseki Kabushiki Kaisha
Filed July 31, 1969, Ser. No. 846,503
Claims priority, application Japan, Aug. 8, 1968, 43/68,084; Feb. 28, 1969, 44/18,575
Int. Cl. D01h *1/12, 11/00*
U.S. Cl. 57—58.91 5 Claims



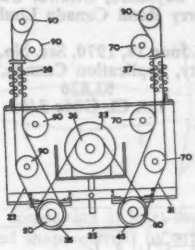
A cotton clogging-preventive device for continuous ringless spinning machines. The device has a rotary spinning chamber having a fiber collecting surface and operating under subatmospheric pressure. Rotary transfer bodies for transferring fibers are disposed between said rotary spinning chamber and the fiber feed part including a collector, and a casing surrounds said rotary transfer bodies and has an air inlet channel directed to the spinning chamber. Between said rotary transfer bodies and the casing wall there is provided in the casing wall an air inlet hole for admitting air from the outside.

3,626,682
METHOD OF AND APPARATUS FOR PROCESSING YARN
Richard C. Spurgeon, R.D. 2, Lansdale, Pa. 19446
Filed May 13, 1970, Ser. No. 36,975
Int. Cl. D02g *1/02, 3/00;* D01h *7/92*
U.S. Cl. 57—77.3 9 Claims



Yarn from a package thereof is threaded through apparatus comprising a tension leveling device, electric heater, false twist device, and tension reducing device and then fed directly to a circular knitting machine or other utility. Close to the heater and interposed between the same and the false twist device is means which effectively coacts with the tension leveling device to restrict twisting of the yarn to the downstream side of the heater.

3,626,683
MECHANISM FOR ROTATING TWIST SPINDLES
Eric Thomas Scriven, Wheathampstead, England, assignor to Scriven & Paget Limited, London, England
Filed Aug. 12, 1969, Ser. No. 849,454
Claims priority, application Great Britain, Aug. 16, 1968, 39,287/68
Int. Cl. D01h *13/00, 7/92*
U.S. Cl. 57—104 5 Claims

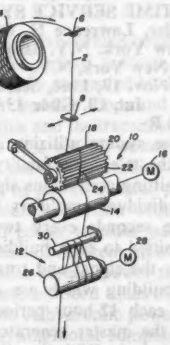


The invention relates to a machine for twisting yarn and a belt drive mechanism in the machines for driving a plurality of false twist spindle units individually rotatable about their own axes to twist lengths of yarn characterised in that the spindle units are driven from the faces of one or other of parallel runs of at least two driving belts driven by a common driving member.

3,626,684
WOOL-LIKE ACRYLIC FOR DOUBLE KNITS
Louis S. Hovis, Triangle Forest, Rte. 1, Cary, N.C. 27511, and James P. Craig, Jr., 4130 Rockingham St., Raleigh, N.C. 27609
No Drawing. Filed May 1, 1969, Ser. No. 821,141
Int. Cl. D02g *1/18, 3/04, 3/24*
U.S. Cl. 57—140 BY 6 Claims

A wool-like acrylic fiber blend is provided which comprises a low denier fiber consisting of at least 50% of a bicomponent acrylonitrile polymer fiber and a high denier fiber consisting of an acrylonitrile polymer fiber.

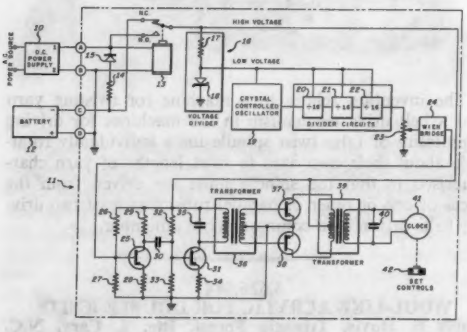
3,626,685
METHOD AND APPARATUS FOR FORWARDING TWISTED YARNS
Roberto Constantakis, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.
Filed Jan. 30, 1970, Ser. No. 7,183
Int. Cl. D01h *7/00, 7/02*
U.S. Cl. 57—156 3 Claims



Apparatus and method for forwarding a non-circular, continuous strand, tow or yarn having a slight twist imparted thereto by guiding the yarn to a forwarding zone

and nipping the yarn intermittently between a tangentially engaging, striated roll assembly which permits the yarn to be forwarded with the twist intact.

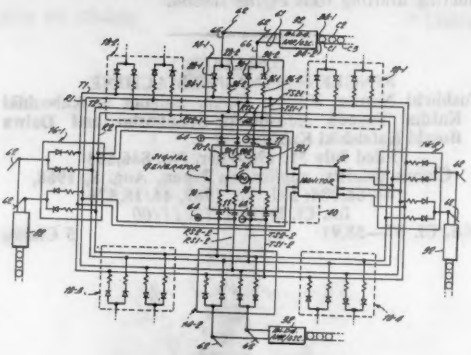
3,626,686
CRYSTAL CONTROLLED ELECTRIC CLOCK
John E. Harris, Bayshore, Ottawa, Ontario, Canada, assignor to Sperry Rand Canada Limited, Toronto, Ontario, Canada
Filed June 18, 1970, Ser. No. 47,463
Claims priority, application Canada, May 14, 1970, 82,826
Int. Cl. G04c *3/00*
U.S. Cl. 58—23 **7 Claims**



A crystal controlled voltage source in combination with an electric clock which provides a high accuracy time piece for use with mobile and remotely located electrical power sources. The device uses a D.C. voltage supply powered from an alternating voltage source which may be subject to frequency fluctuations. The D.C. output voltage energizes a crystal oscillator which generates a high frequency square wave. Integrated divider circuits divide-down the high frequency square wave to 60 hertz which is filtered and amplified thereby producing an alternating voltage source having a frequency stabilized sine waveshape output. The electric clock is operated from this voltage source to provide a highly accurate display of time.

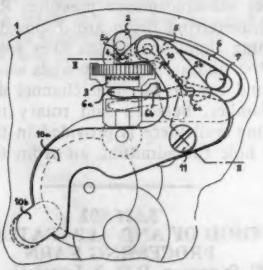
3,626,687
TIME SERVICE SYSTEM
William Fondiller, Lawrence H. O'Neill, and Robert S. Feldstein, New York, N.Y. assignors to Time Control Corporation, New York, N.Y.
Filed Nov. 19, 1968, Ser. No. 777,126
Int. Cl. G04c *13/02*
U.S. Cl. 58—24 R **42 Claims**

A time service system utilizing a single master signal generator and the telephone facility. Dedicated lines are used for transmitting continuous signals from the master generator to individual amplifiers in different buildings. Except for five seconds every twelve hours, a 50-Hz. signal is transmitted to each building amplifier. The amplifier processes the signal and transmits it to numerous clocks in the building which are driven synchronously. At the end of each 12-hour period, a 100-Hz. signal is transmitted by the master generator instead of a 50-Hz. signal for five seconds. With the change in frequency, the clocks automatically reset to a position indicating the exact time when 50-Hz. signal transmission resumes. Thereafter, the clocks are again driven in synchronism with the 50-Hz. signal. Changes to and from daylight saving time are accomplished automatically at the master generator by advancing or delaying the switch-over from



50-Hz. to 100-Hz. transmission by one hour, twice each year.

3,626,688
PULL OUT HAND SETTING MECHANISM FOR A TIMEPIECE
Georges Bullat, Fontainemelon, Switzerland, assignor to Fabrique d'Horlogerie de Fontainemelon S.A., Fontainemelon, Switzerland
Filed Mar. 31, 1970, Ser. No. 24,180
Claims priority, application Switzerland, May 28, 1969, 8,073/69
Int. Cl. G04b *27/04*
U.S. Cl. 58—68 **7 Claims**

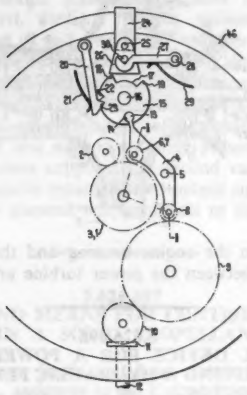


A pull out hand setting mechanism for a timepiece comprises a setting stem, a sliding pinion and a setting lever operatable by the setting stem. The lever and a spring therefore consists of a single piece bent into the shape of a hairpin. The lever and the setting stem are preferably mounted on a common star held axially by a spring arm mounted on the timepiece movement by a single screw.

3,626,689
TIMEPIECE WITH ISOLATED HOUR HAND CHANGING DEVICE
Cyril Vuilleumier, Bienne, Switzerland, assignor to Omega Louis Brandt & Frere S.A., Bienne, Switzerland
Filed Jan. 25, 1971, Ser. No. 109,508
Int. Cl. G04b *27/00*
U.S. Cl. 58—85.5 **5 Claims**

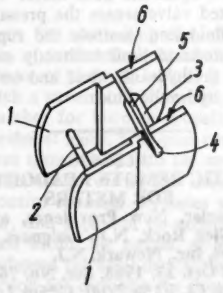
A timepiece comprising an additional gear controlling the hour hand, which gear is rotatably mounted coaxially with a second gear, actuated by the movement of the timepiece, and means actuatable from the outside for rotating the additional gear by one or more steps without influencing the indication of the other hand or hands,

characterized in that it comprises in addition a yoke which may take, under the action of an outer control member, on the one hand, a first position wherein the said gears are interlocked in the direction of rotation upon normal



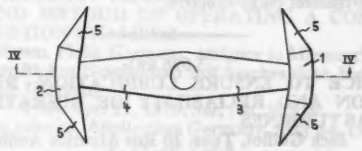
setting of the timepiece and during the running thereof, and, on the other hand, a second position wherein the said gears are disengaged from each other to permit actuating only the additional gear controlling the hour hand.

3,626,690
ARTICLE OF MANUFACTURE
Arthur Fischer, 219, Altheimer Str., 7241 Tumlingen, Germany
Filed June 8, 1970, Ser. No. 44,330
Claims priority, application Germany, July 18, 1969, P 19 36 754.5
Int. Cl. F16g *13/00*
U.S. Cl. 59—84 **5 Claims**



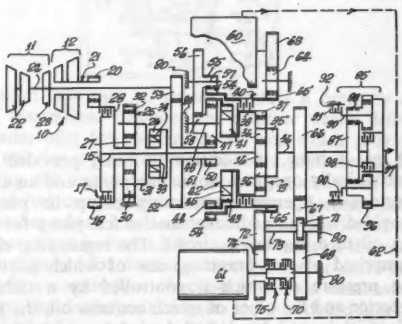
A chain link element has two elongated side walls each having a first portion and a longitudinally adjacent second portion which is inwardly offset with reference to the first portion. A first and a second connecting rod connects the portions together. A slot is provided in the second connecting rod having a general plane inclined to that of the link element and extending lengthwise in the second connecting rod. The link element is connectable to make a chain with another similar link element by positioning its second portions between the first portions of the other link element and introducing the first connecting rod of the other link element through the slot.

3,626,691
WATCH BALANCE
Francois Bonsack, Le Locle, Switzerland, assignor to Les Fabriques d'Assortiments Reunies, Le Locle, Neuchatel, Switzerland
Filed Aug. 25, 1969, Ser. No. 852,559
Claims priority, application Switzerland, Sept. 6, 1968, 13,444/68
Int. Cl. G04b *17/00*
U.S. Cl. 58—107 **6 Claims**



A watch balance comprising at least two inertia-blocks having a streamlined shape carried by arms and extending on the whole over less than the half of the circumference of the balance, the rest of the circumference being free of material, characterized in that the compactness of the inertia-blocks in the range of from .310 to .455 and the material comprising the inertia-blocks a density exceeding 9 g./cm.^{3}.

3,626,692
GAS TURBINE POWER PLANT
Emerson L. Kumm, Scottsdale, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.
Filed Apr. 15, 1970, Ser. No. 28,817
Int. Cl. F02c *7/02*
U.S. Cl. 60—39.16 **16 Claims**



A power plant having a gas turbine engine with separate gas generator and power turbine sections, a transmission with input and output shafts connected by differential gearing, a hydraulic power transfer loop, and power transfer means between the engine and the transmission. The power transfer means has a first set of power transfer paths selectively connecting the power turbine with the input shaft, and a second set of power transfer paths selectively connecting the gas generator section with other parts of the transmission. Both power transfer paths of each set have gear reduction trains of different ratios. Clutch means serve to selectively render certain power transfer paths of each set effective at predetermined times during the operation of the power plant. A hydraulic power transfer loop, with combination pump and motor components in motion-transmitting relation with elements of the transmission and the output shaft, serves in certain phases of operation of the power plant to deliver power from the power turbine to the output shaft, and in other phases of operation from

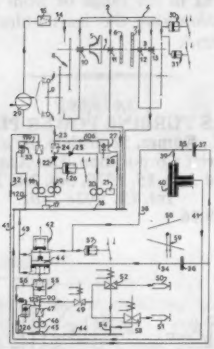
the output shaft to the compressor. A two-speed gear section may be employed between one hydraulic component and the output shaft to increase the effectivity of power transfer at certain speeds. Control means serves during acceleration of the power plant to actuate parts of the clutch means at a certain percentage of the maximum speed of the output shaft to render certain power transfer paths effective, and other parts of the clutch means at a different percentage of the maximum output shaft speed during deceleration of the power plant to render the other power transfer paths effective.

3,626,693

DEVICE TO ENSURE LUBRICATION, REGULATION AND RELIABILITY OF OPERATION OF GAS TURBINES

Jack Guillot, Tour, 20 Rue Maurice Audin, Blanc-Mesnil, Seine-Saint-Denis, France

Filed Nov. 20, 1969, Ser. No. 878,485
Claims priority, application France, Nov. 28, 1968, 50,689
Int. Cl. F02c *9/04, 9/06, 9/10*
U.S. Cl. 60—39.28 **6 Claims**



A gas turbine, in addition to being provided with a mechanically operated lubricating pump and an auxiliary electrically operated lubricating pump in parallel, is provided with an additional mechanical pump for supplying oil to a regulating circuit. The regulatiing circuit is comprised of two branches, one of which contains oil the pressure of which is controlled by a tachometric detector and the other of which contains oil, the pressure of which is modulated. Both branches combine to actuate a regulator which in turn controls a valve for controlling the flow of fuel to the combustion chambers.

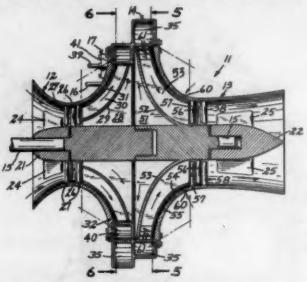
3,626,694

CENTRIFUGAL FLOW GAS TURBINE

Merrill R. Holste, 2228 Saint Stephen St., St. Paul, Minn. 55113

Filed May 18, 1970, Ser. No. 37,952
Int. Cl. F02c *3/08, 3/14, 7/28*
U.S. Cl. 60—39.69 **24 Claims**

A gas turbine having a centrifugal compressor and an inward flow power turbine is disclosed which includes a combustion chamber that spirally encircles the turbine, defining a straight-through passage for the fuel-air mixture as it flows therethrough during ignition, combustion and exhaust. The chamber preserves continuous, laminar flow and thereby increases engine power and efficiency. Also disclosed is a flame holder for the combustion chamber which intermixes ignited gases with the cooler, unignited gas mixture to better maintain ignition in the chamber. A centrifugal air seal is used to prevent blowby or leakage of compression gases and combustion



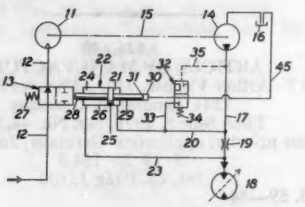
gases between the engine housing and the compression turbine and between the power turbine and its housing.

3,626,695

CONTROL DEVICE FOR A POWER SYSTEM FOR DRIVING A HYDRAULIC FLUID ACTUATED MOTOR

Nils Gunnar Jonsson, Jakobsberg, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Mar. 30, 1970, Ser. No. 23,750
Claims priority, application Sweden, Apr. 3, 1969, 4,859/69
Int. Cl. F16d *31/00*
U.S. Cl. 60—53 R **9 Claims**



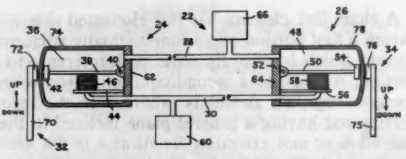
A compressed air motor drives a hydraulic fluid pump which supplies a hydraulic fluid motor with drive fluid. A motor actuated valve senses the pressure and flow of the hydraulic fluid and controls the supply conduit of the air motor so as to limit indirectly on the one hand the pressure of the hydraulic fluid and on the other hand the flow of the hydraulic fluid.

3,626,696

PNEUMATIC REMOTE READOUT SYSTEM FOR METERS

Ronald A. Munier, New Providence, and Norman L. Meyerson, Glen Rock, N.J., assignors to Gamon-Calmet Industries, Inc., Newark, N.J.

Filed Oct. 22, 1968, Ser. No. 769,692
Int. Cl. F15b *7/00*; G06m *1/00*
U.S. Cl. 60— 54.5 R **7 Claims**



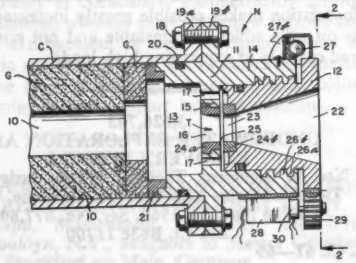
A fluidic telemetering device for the transmission of signals between input signal transmission means and remotely disposed output signal transmission means, including a hermetically sealed chamber system comprising

transmitter chamber cooperatively associated with said input signal transmission means, and a receiver chamber cooperatively associated with said output signal transmission means, and balancing line means connecting said transmitter and receiver chambers, an independently hermetically sealed pressure responsive means system comprising first, variable volume pressure responsive means disposed in said transmitter chamber, second variable volume pressure responsive means disposed in said receiver chamber, and balancing line means connecting said first and second variable volume pressure responsive means, means coupling said input signal transmission means to said first variable volume pressure responsive means, and means coupling said second variable volume pressure responsive means to said output signal transmission means to transmit output signals to the latter.

3,626,697
METHOD AND MEANS FOR CONTROLLING THE THRUST IN A SOLID PROPELLANT ROCKET MOTOR

Robert H. Nunn, Davis, and Lane Curtis Chafin, China Lake, Calif., assignors to the United States of America as represented by the Secretary of the Navy

Filed Jan. 22, 1965, Ser. No. 428,021
Int. Cl. B63h *11/00*
U.S. Cl. 60—204 **3 Claims**



1. In a system for controlling the effective chamber pressures within a combustion chamber of a variable-thrust rocket motor of the type including an exhaust nozzle through which a stream of exhaust gases is expelled, a combustion chamber for burning propellants therein for generating the exhaust gases, a by-pass conduit for directing exhaust gases transversely into the stream of exhaust gases to thus effectively restrict the stream and thereby establish and control chamber pressures within said combustion chamber, and a pair of co-axially aligned nozzle sections arranged within the nozzle, at least one of said sections being adapted for axial displacement with respect to the other section for dictating the flow of transversely directed exhaust gases, the improvement comprising:

(a) means defining an internally threaded nozzle block surrounding said one section;

(b) means defining an externally threaded surface for said one section being so disposed as to be mated in threaded engagement with the threads of said nozzle block, whereby said one section may be counter-rotated for axial displacement relative to the other co-axially aligned nozzle section;

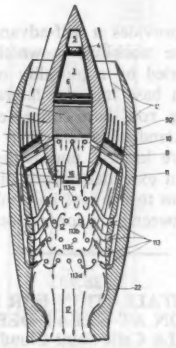
(c) resilient means connected between said block and said one section for continuously applying a rotating force to said one section for displacing said one section in a first direction for reducing the flow of exhaust gases as the gases are directed transversely into the exhaust stream; and

(d) selectively operable drive and brake means connected with said one section adapted to be activated for rotating said one section in opposition to said spring for thereby displacing said one section in an opposite second axial direction and for selectively retaining said one section against spring induced rotation.

3,626,698
COMBUSTION CHAMBER CONSTRUCTION AND METHOD OF OPERATING A COMBUSTION CHAMBER

Werner Baum, Flein, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Germany

Filed Apr. 21, 1970, Ser. No. 30,550
Claims priority, Application Germany, May 24, 1969, P 19 26 728.8
Int. Cl. F02k *7/10*
U.S. Cl. 60—270 R **19 Claims**



A rocket type ram jet engine includes a centrally arranged streamlined displacement member which defines an annular inlet for combustion air and which provides a reservoir for a fuel component and a pressure gas for atomizing the component in a catalyst chamber. The atomized fuel component is directed into a decomposition gas chamber where it is decomposed and a portion of the decomposed gas is directed through the walls of the combustion chamber for discharge through one or more fuel nozzles in a counterflow direction in a main combustion chamber. The decomposition gases are introduced into the main combustion chamher at a location downstream of the discharge from the decomposition gas chamber. The combustion chamber is operated with decomposition gases which are obtained from hydrazine or its derivatives by catalytic decomposition. The first quantity of the decomposition gas is introduced centrally into the main combustion chamber and a second partial gas quantity is injected by nozzles into the main combustion chamber downstream of the main introduction and counter to the flow thereof.

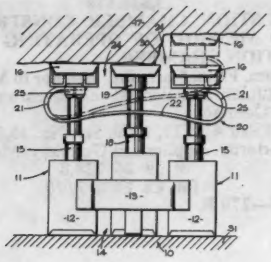
3,626,699
GROUTING OF SOILS

William Arthur Lees, Chandlers Ford, England, assignor to Borden, Inc., New York, N.Y.

No Drawing. Filed Jan. 5, 1970, Ser. No. 831
Int. Cl. E02d *3/12, 3/14*
U.S. Cl. 61—36 R **1 Claim**

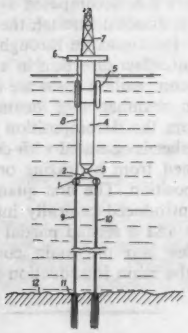
The present invention relates to a method for the stabilization of soil which comprises impregnating the soil with an aqueous silica acid hydrosol optionally containing a gelation accelerator.

3,626,700
SUPERSTRUCTURE IN SELF-ADVANCING ROOF SUPPORTS
Karl Maria Groetschel, 44 Stolzestrasse, 463 Bochum, Germany
Filed Jan. 26, 1970, Ser. No. 5,498
Int. Cl. E21d *15/44*
U.S. Cl. 61—45 D **12 Claims**



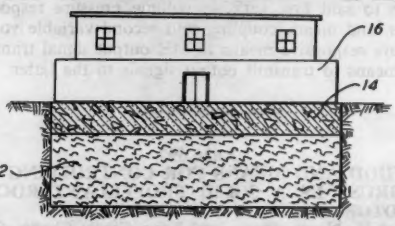
The invention provides a self-advancing roof support primarily for mine workings in which a roof-engaging superstructure carried by a plurality of hydraulic props upstanding from a base includes laterally spaced, longitudinally extending, roof bars connected with each other by transversely extending spring strip elements incorporating one or more looped, undulating, or arcuate portions to provide an extended length of the strip element between connections to the roof bars substantially exceeding the distance between such connections.

3,626,701
EMERGENT INSTALLATION FOR DRILLING AND PRODUCTION AT GREAT DEPTH AT SEA
Maurice Laffont, La Celle-Saint-Cloud, France, assignor to Societe Nationale des Petroles d'Aquitaine, Paris, France
Filed Mar. 26, 1970, Ser. No. 22,842
Claims priority, application France, Apr. 4, 1969, 10,528
Int. Cl. E02b *17/00*; E21b *43/01*
U.S. Cl. 61—46.5 **5 Claims**



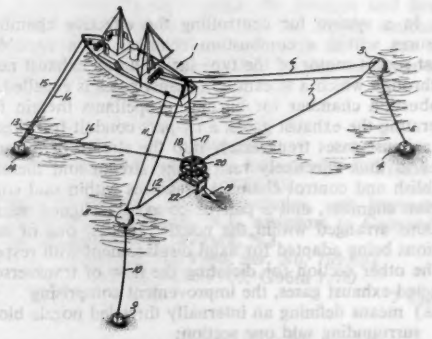
An emergent drilling and production installation for operating at great depths at sea, especially for the production of hydrocarbons from a field under the sea-bed, comprising the combination of an oscillating column having a positive buoyancy, supporting at its upper portion a drilling and production platform and articulated at its lower portion, with two degrees of freedom, on a base having a high positive buoyancy and fixed to the sea-bed at a pre-determined distance therefrom by anchorage members under tension driven and cemented into the sea-bed. The oscillating column may be provided with internal storage compartments for receiving part of the products obtained.

3,626,702
FLOATING FOUNDATION AND PROCESS THEREFOR
Edward J. Monahan, 381 Broad St., Apt. A913, Newark, N.J. 07104
Filed Feb. 12, 1970, Ser. No. 10,843
Int. Cl. E02d *3/12, 27/36, 27/46*
U.S. Cl. 61—50 **13 Claims**



There is provided a novel form of floating subfoundation and a method of producing the same. The novel subfoundation comprises a layer of moderately rigid, synthetic, polymeric foam placed in the excavation for a structure. A customary rigid foundation, suitably of reinforced concrete is placed over the subfoundation and the structure erected upon the rigid foundation. The novel subfoundation makes possible greatly increased structural loads on soils which are unstable and not normally considered capable of supporting high loads.

3,626,703
UNDERWATER EXPLORATION AND RECOVERY VEHICLE
Ned F. Richburg, Tacoma, Wash., assignor to Twanoh Marine Charters, Inc., Bellevue, Wash.
Filed Nov. 18, 1969, Ser. No. 877,804
Int. Cl. B63c *11/00*
U.S. Cl. 61—69 **11 Claims**

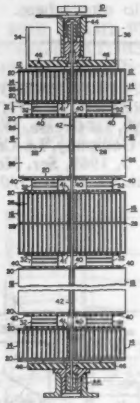


An underwater exploration and recovery vehicle capable of recovering submerged objects from the depths of an ocean or lake. The vehicle comprises frame means, a tool holder means rotatively attached to the frame means for rotation to engage a workpiece and instrumentation to aid and observe the recovery operation. The instrumentation is used to assist in positioning the vehicle under water adjacent the object to be recovered and includes sonar, closed circuit television, lighting apparatus and the like. The tool holder means is adapted to carry various tools including hooks, nooses, wrenches, nets, claws, clams, drills, and the like.

3,626,704
THERMOELECTRIC UNIT

Harry D. Coe, Jr., Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 9, 1970, Ser. No. 1,613
Int. Cl. F25b *21/02*
U.S. Cl. 62—3 7 Claims

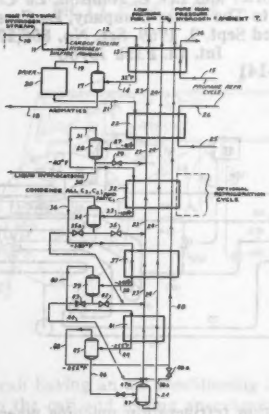


The invention relates in general to thermoelectric units and more particularly to a thermoelectric unit which includes a plurality of coextensive symmetrically arranged elongated columns, wherein each column is formed from an alternate arrangement of heat exchange means and thermoelectric material. Means are provided for exerting a compressive force through the length of each column and for exerting lateral support between columns.

3,626,705
LOW TEMPERATURE SEPARATION OF GASEOUS MIXTURES EMPLOYING SOLIDIFICATION

Helmut Knapp, Massenheim, Germany, and Irving Weiss, Brooklyn, N.Y., assignors to Messer Griesheim G.m.b.H., Frankfurt am Main, Germany

Continuation of applications Ser. No. 386,595, July 31, 1964, and Ser. No. 624,621, Mar. 20, 1967. This application Sept. 4, 1968, Ser. No. 785,831
Int. Cl. F25j *1/02, 3/06*
U.S. Cl. 62—23 3 Claims

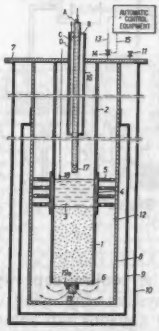


A process for recovering hydrogen from a refinery off gas by progressive reduction in temperature of the gas and successive removal of respective contaminants therefrom by condensation thereof. At least some of the condensed contaminants are expanded and employed as a refrigerating fluid in the process. Methane which precipitates out as solid in the final stage of heat exchange is removed in an alternating exchanger purge arrangement. In a hydrogen purification system, a portion of the purified hydrogen is mixed with the condensed hydrocarbons separated from the crude hydrogen and this mixture is used to cool the crude hydrogen to be purified.

3,626,706
CRYOSTAT

Albrecht Elsner, Hechtsheim, and Gustav Klipping, Berlin, Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschafter e.V., Gottingen, Germany

Filed Mar. 26, 1970, Ser. No. 22,846
Claims priority, application Germany, Apr. 12, 1969, P 19 18 624.4
Int. Cl. F25b *19/00*
U.S. Cl. 62—62 15 Claims

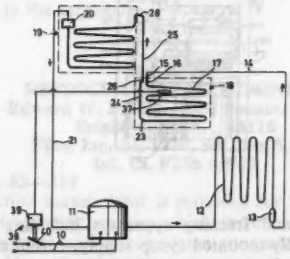


Liquid helium flows downwardly through an element having a pore size of less than 10^{-4} cm. A controlled vacuum is placed at the lower end of the element. The liquid helium is completely evaporated at this lower end. The gases emitted at the lower end have a temperature determined by the controlled vacuum. In this way, a cryogenic cooling of a determined temperature is made available.

3,626,707
METHOD AND APPARATUS FOR DEFROSTING REFRIGERATORS

Gottlob Bauknecht, Stuttgart, and Karl Laszlo, Welzheim, Germany, assignors to Gottlob Bauknecht Elektromotorenbau, Stuttgart, Germany

Filed Apr. 23, 1970, Ser. No. 31,166
Claims priority, application Germany, Apr. 23, 1969, P 19 20 513.1
Int. Cl. F25d *21/00*
U.S. Cl. 62—81 11 Claims



In a two-temperature refrigerator wherein the defrosting of the cooler evaporator is effected by natural thawing

during the periodic inoperative periods of the refrigerating apparatus in order to expedite said defrosting, the liquid refrigerant present in the cooler evaporator upon stoppage of the compressor is forced into the freezer evaporator by pneumatic pressure generated by the evaporization of a small quantity of liquid refrigerant introduced into the cooler evaporator through a capillary tube at the beginning of the inoperative period.

3,626,708

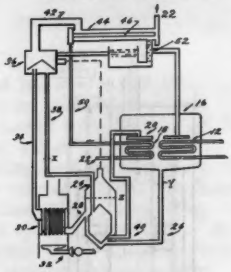
REDUCTION OF VAPOR PRESSURE IN ABSORPTION TYPE REFRIGERATION CYCLE

Chester C. Lyon, Evansville, Ind., assignor to Arkla Industries, Inc., Evansville, Ind.

Continuation-in-part of application Ser. No. 673,204, Oct. 5, 1967. This application Oct, 5, 1970, Ser. No. 78,305

Int. Cl. F25b *15/06*

U.S. Cl. 62—112 2 Claims



An increase in the cooling capacity of an absorption-type refrigeration system employing water as refrigerant and a conventional aqueous salt solution as absorbent is obtained by incorporating a small amount of an additive which is ethylene glycol monobutyl ether and/or diethylene glycol monobutyl ether in the salt solution. The presence of the ether lowers the operating vapor pressure in the absorber section of this type of system and thereby effects a lower operating refrigerant temperature in the evaporator section.

3,626,709

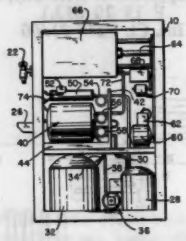
APPARATUS FOR PREPARATION OF FROZEN CONFECTIONS

Rudolph A. Yuza, Paris, Ill., assignor to Astro Controls, Inc., Chicago, Ill.

Filed Nov. 24, 1969, Ser. No. 879,170

Int. Cl. F25c *7/18*

U.S. Cl. 62—136 15 Claims



A blending and freezing apparatus including weight sensitive pivotally-mounted syrup supply, carbonator and blender receptacles, automatic liquid level and delivery control means therefor, means to disperse and mix carbonated water and syrup under pressure of a carbonating gas to produce a carbonated liquid feed, a freezing zone including means to apply a shearing force upon and through the solidifying liquid feed to maintain same as a flowable mass, means to regulate the refrigeration conditions applied to the freezing zone in accordance with the torque required to drive the shearing force, means to maintain a reverse flow pre-cooling zone in the freezing zone and prevent channeling therethrough and means to discharge the product to atmosphere.

3,626,710

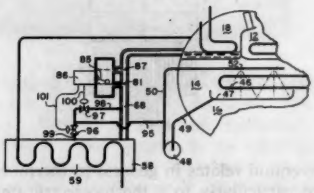
CRYSTALLIZATION PREVENTION CONTROL FOR ABSORPTION REFRIGERATION MACHINES

James M. Porter, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Sept. 9, 1969, Ser. No. 856,266

Int. Cl. F25b *15/06*

U.S. Cl. 62—141 6 Claims



A control which senses impending crystallization is utilized in an absorption refrigeration machine to prevent solidification of absorption solution in the critical areas of the machine. A sensing element senses a rise in concentrated solution level between the generator and the heat exchanger, which rise in solution level is indicative of impending crystallization. This sensor can actuate one or more of a plurality of controls which will cause dilution of the concentrated solution in the heat exchanger or other crystallization prone areas. As the solution level in the conduit between the generator and the heat exchanger returns to an operating level, additional automatic controls are actuated to proceed with a dilution and shutdown cycle.

3,626,711

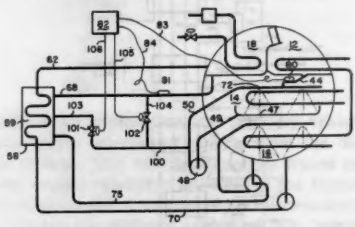
CRYSTALLIZATION PREVENTION CONTROL

James M. Porter and Lee E. Johnson, La Crosse, Wis., assignors to The Trane Company, La Crosse, Wis.

Filed Sept. 9, 1969, Ser. No. 856,275

Int. Cl. F25b *15/06*

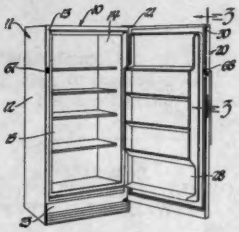
U.S. Cl. 62—141 3 Claims



An absorption refrigeration machine wherein the condenser temperature and the temperature of the concentrated solution leaving the generator are sensed to provide a signal or measure of impending crystallization in the

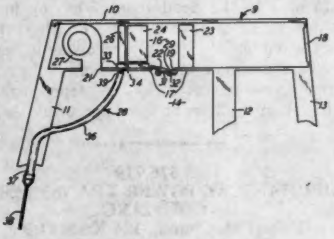
solution heat exchanger. When the aforementioned temperatures reach a predetermined maximum a control signal is transmitted to a normally closed valve. The valve opens and dumps refrigerant or other dilute solution into the heat exchanger and associated piping which contains partially crystallized absorbent solution.

3,626,712
SAFETY LOCK FOR FOOD FREEZERS OR REFRIGERATORS
Leonard J. Mann, Kettering, and Thomas H. Fogt, Carrollton, Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Sept. 21, 1970, Ser. No. 73,880
Int. Cl. F25d *29/00*
U.S. Cl. 62—161 **3 Claims**



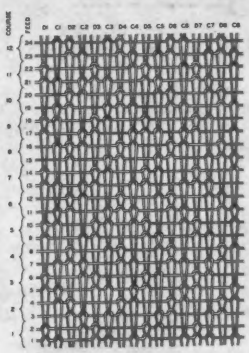
A safety lock for locking the door structure of a food freezer or refrigerator to prevent unauthorized access to the food compartment which functions in combination with a magnetic type door seal such that the latch operates to lock the door. The door lock is provided with thermostatic means which permits the door to be locked and unlocked in the ordinary manner by means of a key operated locking bolt when the freezer is being used for the preservation of food and which thermostatic means renders the lock inoperative in a fail-safe manner to prevent locking the door in the event the freezer is disconnected from its current supply.

3,626,713
VEHICLE CAB AIR CONDITIONING SYSTEM
Phillip G. Venable, Orion, Ill., assignor to J. I. Case Company, Racine, Wis.
Filed Apr. 23, 1970, Ser. No. 31,271
Int. Cl. F25d *17/04*
U.S. Cl. 62—187 **6 Claims**



A vehicle cab having an air conditioning compartment contiguous to the cab and having an evaporator with an air blower on one side and an air filter on the other side, and all being disposed in the compartment. A condensate drain tray is disposed in the compartment beneath the evaporator, and a drain tube extends from the tray to a location outside the vehicle enclosure. The drain tube has an atmospheric air responsive control which automatically closes when there is air pressure differential between the air conditioning compartment and the outside. This prevents air from flowing into the drain tube and into the compartment, and it also thus permits the condensate to drain from the tube and not be detained by the air pressure differential Also, a regulator door is provided on the .compartment for recirculation of air from the cab enclosure and to the compartment, and the door provides a control for the air pressure differential between the cab enclosure and the compartment.

3,626,714
DOUBLE KNIT FABRIC HAVING A TEXTURED APPEARANCE
James H. Blore, Greenville, S.C., assignor to Phillips Fibers Corporation
Filed Nov. 13, 1969, Ser. No. 876,390
Int. Cl. D04b *9/08*
U.S. Cl. 66—196 **8 Claims**

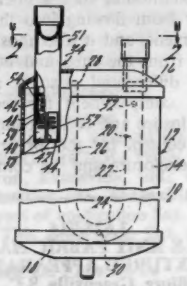


The double knit fabric has a first set of alternating wales forming the reverse side of the fabric. Each course has first and second yarns. In the front wales the yarns are knitted in a random fashion, with the first yarn in each course having a knit stitch when the second yarn has either a tuck stitch or a welt stitch and having either a tuck stitch or a welt stitch when the second yarn has a knit stitch. One set of the first yarns or the second yarns has more knit stitches than the other set in the front wales, and one set has a longer average knit stitch length than the other set in the front wales. In the reverse side wales, the first and second yarns have knit stitches in even numbered wales in even numbered courses and in the odd numbered wales in odd numbered courses, and either tuck or welt stitches in the remainder.

3,626,715
REFRIGERATION COMPONENT
Edward W. Bottum, 9357 Spencer Road, Brighton, Mich. 48116
Filed Jan. 22, 1970, Ser. No. 5,006
Int. Cl. F25b *43/00*
U.S. Cl. 62—217 **3 Claims**

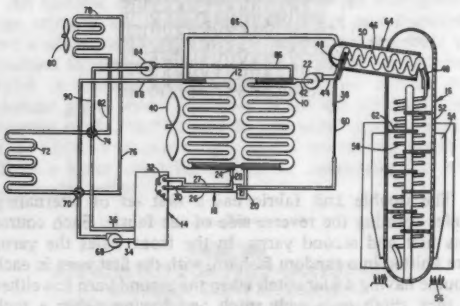
A suction accumulator is provided for the compressor of a refrigeration system which includes a compressor, an evaporator and a condenser connected in operative relationship with refrigerant expansion means between the condenser and evaporator. The suction accumulator includes an evaporator pressure regulator valve on the inlet

which is a device sensitive to the temperature of incoming evaporator gases to open or close in accordance therewith



to maintain the pressure-temperature conditions of the evaporator at a desired level.

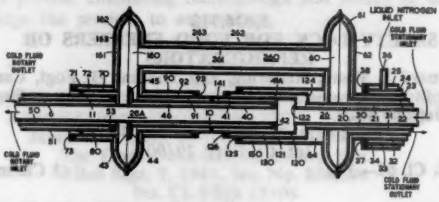
3,626,716
ABSORPTION REFRIGERATION MACHINE HEAT PUMP
Louis H. Leonard, Jr., Dewitt, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Oct. 15, 1969, Ser. No. 866,699
Int. Cl. F25b *13/00, 15/04*
U.S. Cl. 62—324 **3 Claims**



An absorption refrigeration machine employing an absorber and a condenser adapted for passage of ambient air thereover for cooling the condenser and absorber when the machine is operating on the cooling mode and for passage of a liquid heat exchange medium through the absorber and condenser for cooling thereof when the machine is operating on the heating mode.

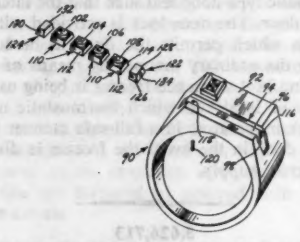
3,626,717
APPARATUS FOR CONVEYING A COLD FLUID TO AND FROM A ROTATABLE BODY
Hugh Olaf, Lorch, Stafford, England, assignor to The English Electric Company Limited, London, England
Filed Aug. 27, 1970, Ser. No. 67,463
Int. Cl. F25b *31/00*
U.S. Cl. 62—505 **13 Claims**

In apparatus for conveying a cold fluid to and from a rotatable body a stationary inlet tube conveys the cold fluid to a rotatable inlet tube carried on the axis of the body and a rotary seal is provided between these two tubes, cold fluid flows from the rotatable body by way of a rotatable outlet tube and means are provided for conveying the cold fluid from the rotatable outlet tube to a stationary outlet tube which bypasses the rotary seal so that the cold fluid is not heated by the rotary seal. Some cold fluid is allowed to escape from the stationary



inlet tube and also from the rotatable outlet tube and this cold fluid is caused to flow up to and around the rotary seal so thermally isolating the seal from the flow paths of the cold fluid.

3,626,718
ARTICLE OF JEWELRY WITH DETACHABLY MOUNTED JEWELS AND KEEPER MEANS THEREFOR
Jack Schneider, North Miami Beach, Fla., assignor to William Schneider Inc., New York, N.Y.
Filed Dec. 10, 1969, Ser. No. 883,702
Int. Cl. A44c *17/02*
U.S. Cl. 63—29 R **2 Claims**

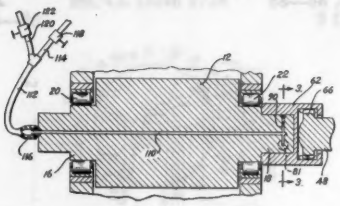


A custom-made finger ring is adapted to mount a selected number of set jewels therein. The keeper may be a single member with a recess holding said jewels, or a pair of members to be secured in said groove at respective ends of a row of said jewels. The ring has a transverse groove formed in the head thereof having inclined side walls which make a dove-tail fit with the settings of a row of selected jewels slidably received in said groove. Keeper means mounted in said groove brackets the row of jewels and screw means lock the keeper means in said groove to retain the row of jewels securely therein.

3,626,719
MECHANICAL POWER TRANSMISSION COUPLING
Robert M. Church, 126 Knox Drive, West Lafayette, Ind. 47906
Filed June 26, 1970, Ser. No. 50,114
Int. Cl. F16d *3/00*
U.S. Cl. 64—6 **11 Claims**

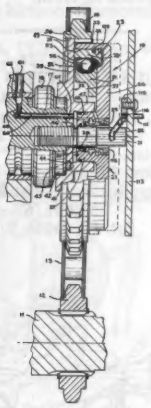
A mechanical power transmission coupling structure particularly suitable for use with a rolling mill having a roll with a neck or drive shaft connected to the roll, in which the coupling structure includes lands on the roll neck and a connector with a bore having corresponding

lands therein for mounting on the roll neck. Fluid operated pistons disposed in cylinders in the neck engage the lands on the adapter to form a firm connection between the coupling and the roll. The fluid, which is preferably hydraulic, is transmitted to the cylinders in the roll neck through



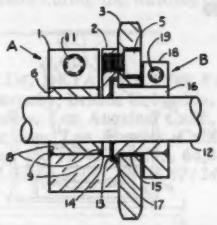
passages in the roll. When the pistons are actuated, the lands on the roll neck seat on the lands of the adapter, thereby eliminating or minimizing movement between the parts and preventing fretting, excessive wear, and backlash.

3,626,720
EMISSION CONTROL DEVICE
George B. K. Meacham, Birmingham, and James L. Oliver, Royal Oak, Mich., assignors to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed Dec. 19, 1968, Ser. No. 785,324
Int. Cl. F16d *5/00*
U.S. Cl. 64—25 **10 Claims**



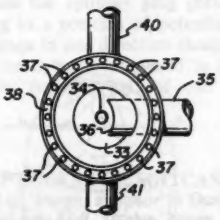
A mechanism for varying the phase relationship of a camshaft with respect to crankshaft. A driven member is secured in fixed relationship to the camshaft and is connected through a helical ball spline to a piston member which is nonrotatably related to the crankshaft. The piston member and the driven member define a fluid chamber therebetween. A shiftable valve member permits flow of fluid to said chamber causing the piston to move axially relative to the driven member, whereby the helical ball spline causes the driven member to rotate relative to the piston, which in turn causes rotation of the camshaft relative to the crankshaft. The valve member may be controlled either manually or automatically in response to an engine operating condition.

3,626,721
TORQUE LIMITER
Richard F. Koen, 127 Ridgefield Road, Lutherville, Md. 21093
Filed Aug. 29, 1969, Ser. No. 854,162
Int. Cl. F16d *7/02*
U.S. Cl. 64—30 **1 Claim**



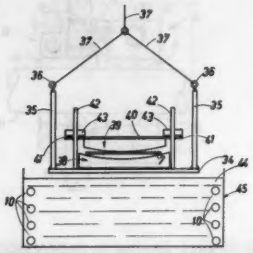
A torque limiter having a prestressed split collar for gripping a shaft and a power transmitting member attached thereto for receiving power from the shaft or transmitting power thereto, the prestressed collar having an internal liner or bushing surrounding the shaft, the liner having spongy or springy qualities and torque loads over a predetermined amount will cause rotary slippage between the liner and the shaft.

3,626,722
METHOD AND APPARATUS FOR PRODUCING A FINELY DIVIDED PROTECTED SPRAY OF LIQUID
Joseph Corsentino, deceased, late of Belton, Tex., by Donald J. Corsentino, executor, Temple, Tex., assignor to The Susquehanna Corporation
Original application Oct. 18, 1965, Ser. No. 496,987. Divided and this application July 22, 1969, Ser. No. 845,123
Int. Cl. C03c *25/02*
U.S. Cl. 65—3 **5 Claims**



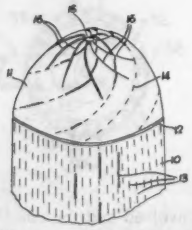
The method involved and the combination of a device for spraying a liquid binder and the like into a stream of fibers produced from molten slag by a rotating head and steam ring, at least two devices being spaced around the rotating head, with their axes inclined toward the stream of fibers. Each device produces a central jet of gaseous fluid, such as steam, directed axially toward a liquid binder or the like supplied through a pipe generally transverse to the axis and having an arcuate inner end in adjacent but spaced position to the jet. An outer annulus of gaseous fluid, such as steam discharged from an annular series of holes, is directed generally coaxially with the central jet to surround the central jet and spray produced thereby and also increase the velocity of the spray as the spray stream expands. The annulus protects the spray from volatilization by heat in the environmental conditions of use.

3,626,723
PRODUCTION OF CHEMICALLY STRENGTHENED CURVED GLASS BODIES
Emile Plumat, Gilly, Belgium, assignor to Glaverbel S.A., Watermael-Boitsfort, Belgium
Filed Apr. 18, 1968, Ser. No. 722,359
Claims priority, application Luxembourg, Apr. 28, 1967, 53,550
Int. Cl. C03c *21/00*
U.S. Cl. 65—30 18 Claims



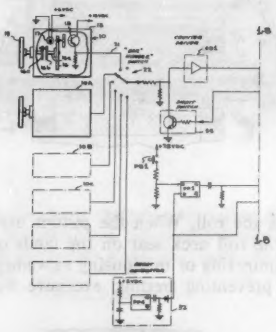
A procedure for forming curved, tempered glass sheets by chemically tempering the sheets by means of a diffusion process and then bending the sheets to the desired curved form while the sheets are at a raised temperature which gives them a viscosity of no less than 10^{10} poises, whereby the sheets can be bent after tempering without having to be subjected to extremely high temperatures.

3,626,724
METHOD OF KNITTING A TUBE WITH A CLOSED END
Harry Wignall, Leicester, and Gillies Wood, Evington, Leicester, England, assignors to The Bentley Engineering Company Limited, Leicester, England
Filed Jan. 10, 1969, Ser. No. 790,384
Claims priority, application Great Britain, Jan. 11, 1968, 1,756/68; Feb. 23, 1968, 8,888/68
Int. Cl. D04b *9/56, 9/54*
U.S. Cl. 66—14 5 Claims



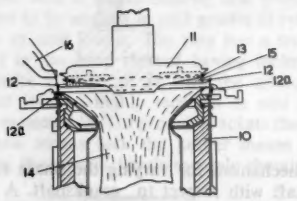
A method of forming a closed or partially closed fabric tube on a knitting machine wherein an end pouch is formed by knitting double fabric in the manner of a turned welt from a yarn or yarns having a high degree of twist liveliness, the effect of the twist liveliness being to cause the wales in one ply of the welt to deviate slantwise in one direction and the wales in the other ply of the welt to deviate slantwise in the opposite direction, the fabric being thereby caused to become twisted so that at the fold of the welt-like portion it is constricted to a substantial or complete closure; and also a tubular knitted fabric having a substantially or completely closed pouch at one end produced by such method.

3,626,725
RUNNER CHECKER APPARATUS FOR WARP KNITTING MACHINES
Raymond Baines Fertig, Ronceverte, and Samuel Eugene Mitchell, Lewisburg, W. Va., assignors to Appalachian Electronic Instruments, Inc., Ronceverte, W. Va.
Filed Oct. 15, 1970, Ser. No. 80,944
Int. Cl. D04b *27/00*
U.S. Cl. 66—86 24 Claims



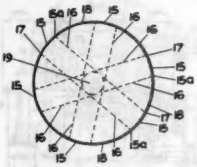
A runner checker for measuring and indicating the length of yarn being fed from the warp beam section of a warp knitting machine, including a pulse generator mounted on each tension let-off controller assembly of a warp beam section to produce pulses related to unit lengths of warp yarn feed, a device connected to the pattern wheel drive shaft of the knitting machine for producing pulses related to pattern wheel rotation, and electronic circuitry responding to the pulses to indicate the yarn runner length in a rack of cloth.

3,626,726
TUBULAR KNITTED FABRICS
Peter Michael Findlay, Forest East, William Ewart Alan Shelton, Oadby, and John Michael Klee, Leicester, England, assignors to The Bentley Engineering Company Limited, Leicester, England
Filed Nov. 19, 1968, Ser. No. 776,943
Claims priority, application Great Britain, Nov. 22, 1967, 53,066/67
Int. Cl. D04b *9/56*
U.S. Cl. 66—95 12 Claims



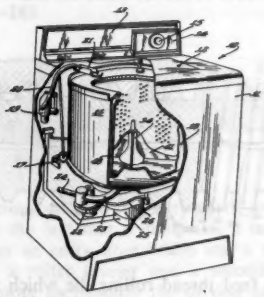
A closed fabric tube and method of forming it in which a first tubular portion of fabric is knitted on a knitting machine and, whilst its last formed loops are held, another and separate tubular portion of fabric is formed on the machine and closed by constriction, the two portions of fabric being afterwards joined by at least one connecting course of knitting. The separate second portion of fabric may be of welt-like construction and constricted at the fold of the welt.

3,626,727
TUBULAR KNITTED FABRIC
Gillies Wood, Evington, England, assignor to The Bentley Engineering Company Limited, Leicester, England
Filed Dec. 1, 1969, Ser. No. 881,227
Claims priority, application Great Britain, Dec. 6, 1968, 57,963/68
Int. Cl. D04b *9/56*
U.S. Cl. 66—95 **5 Claims**



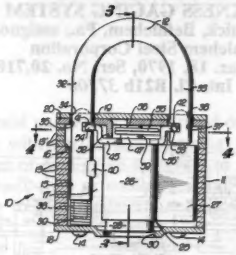
A closed fabric tube and more especially a foot part of a stocking or other article of hosiery footwear, and a method of forming it in which a double ply welt-like portion of closure fabric is constricted by means of U-shaped loops of yarn spaced around the fabric and each partly encircling the fold line of the welt-like portion and anchored at each end in a knitted course at the junction of the plies thereof. Each U-shaped loop may be formed of yarn used in knitting the welt-like portion and may be of a length such that full constriction to close the fabric is obtained when the closure fabric is extended to a required shape.

3,626,728
BASKET WITH FILTER MEANS FOR AUTOMATIC WASHER
John H. Traube, and Robert A. Brenner, St. Joseph, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Aug. 6, 1970, Ser. No. 61,677
Int. Cl. D06f *39/10*
U.S. Cl. 68—18 F **10 Claims**



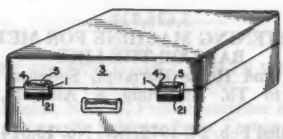
An upstanding basket for use in a vertical axis automatic washing apparatus characterized by having an agitator affixed to the interior of the basket, filtering means disposed on the upstanding side wall of the basket and pumping vanes mounted on the exterior of the bottom wall of the basket. In the preferred embodiment, a bottom portion of the basket, the agitator and the pumping vanes are in an integral molded plastic unit which is joined to other portions to complete the basket. The filtering means are small perforations in the side wall of the basket which are the size to filter foreign matter from the washing fluids. In operation, the pumping vanes cause fluid disposed in the space between the basket and the outer tub of the automatic washing apparatus to flow outward and upward along the outer surface of the surrounding side wall to enter the interior of the basket through the small filtering perforations. During a spin cycle, fluid disposed in the interior of the basket is forced out through the small filtering perforations to wash away any foreign material that is accumulated thereon during the washing operation.

3,626,729
CYLINDER PLUG RETAINER FOR PADLOCK
William J. Fane, Burnaby, British Columbia, Canada, and Vernard W. Sanders, Los Angeles, Calif., assignors to Norris Industries, Inc., Los Angeles, Calif.
Filed Aug. 17, 1970, Ser. No. 64,241
Int. Cl. E05b *9/04, 17/04 67/24*
U.S. Cl. 70—38 A **9 Claims**



A padlock body constructed of multiple laminations has a chamber occupied by a pin tumbler lock for locking and unlocking a shackle. Inwardly facing notches in respective long and short legs of the shackle are engaged by locking lugs of a locking plate which is rotated to locked position by an extension on a rotating cylinder plug in the lock. The extension protrudes through an opening in the locking plate and opposite outwardly facing undercut segments of the cylinder plug overlie the locking plate to hold the pin tumbler lock in the chamber. Stops respectively on the cylinder plug prevent rotation of the cylinder plug to a position of potential disengagement when they engage in one direction shoulders formed in the opening in the cylinder plug and in the opposite direction a shoulder forming part of one of the end laminations.

3,626,730
DIE-CAST LOCKS FOR SUITCASES
Mikio Murase, Yao, Japan, assignor to Osaka Trunk Material Co. Ltd., Osaka, Japan
Filed Nov. 10, 1970, Ser. No. 88,451
Claims priority, application Japan, July 18, 1970, 45/62,994
Int. Cl. E05c *65/52, 19/10*
U.S. Cl. 70—70 **10 Claims**



A latch lock for suitcases in which an upper member secured to the cover has a vertical plate tongue extending beyond the bottom edge of the cover with a vertically slidable latch plate having a laterally extending hook mounted

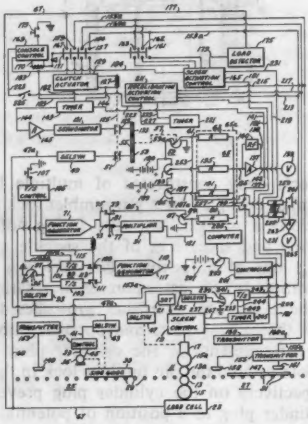
for vertical sliding movement with the hook lying within the dimensions of the vertically extending plate and spring-pressed to a raised inoperative position, and having a finger-engageable handle for projecting the latch hook, a lower member secured to the bottom portion of the suitcase has a horizontally slidable catch which cooperates with the latch hook of the upper member and is horizontally slidable by finger-engagement with the manually engageable slide to move the catch laterally for disengagement of the latch hook and catch hook to permit opening of the suitcase, the latch hook and catch hook having cam surfaces whereby closing the suitcase automatically causes the latch and catch to engage, due to spring urging of the parts. A key lock is provided for preventing the catch slide from being surreptitiously opened.

3,626,731

AUTOMATIC CALIBRATION OF ROLLING MILL THICKNESS GAGING SYSTEM

William Jeuick, Bethlehem, Pa., assignor to Bethlehem Steel Corporation

Filed Mar. 18, 1970, Ser. No. 20,710
Int. Cl. B21b *37/00*
U.S. Cl. 72—8 **12 Claims**



A rolling mill control system, which uses a load cell signal to determine the stretch of the mill under load, is periodically recalibrated to correct for drift by moving the work rolls into contact to establish the true zero setting that serves as the basis in the system for determining the correct gage of strip subsequently rolled. A biasing signal is provided during recalibration to relate, in a straight line relationship, the stretch of the mill structure to the load detected by the load cell in order to enable the recalibration to be accomplished quickly and without hunting in the system at any indicated below face position of the rolls.

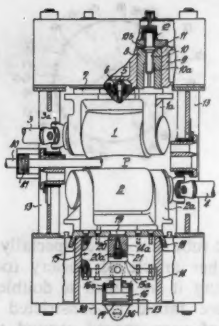
3,626,732

STRAIGHTENING MACHINE FOR METALLIC BARS OR THE LIKE

Erich Krafft and Heinz Hartkopf, Solingen, Germany, assignors to Th. Kieserling & Albrecht, Solingen, Germany

Filed Feb. 24, 1970, Ser. No. 13,614
Claims priority, application Germany, Mar. 4, 1969, P 19 10 879.3
Int. Cl. B21d *3/04*
U.S. Cl. 72—99 **8 Claims**

A straightening machine for workpieces of circular or other than circular cross section wherein the lower roll of a pair of superimposed straightening rolls is movable to and from a retracted position in which its carrier abuts against the housing and cannot yield when the rolls treat workpieces of circular cross section. The carrier is mounted on the piston of a double-acting hydraulic cylinder which can move the lower roll from retracted position to bias it against a workpiece of other than circular cross section. The cylinder can receive pressurized oil from a



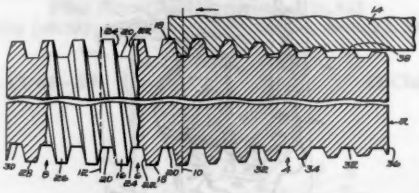
pump by way of a first solenoid-operated valve which can effect rapid movements of the lower roll to and from retracted position, and from an accumulator by way of a second solenoid operated valve which can admit highly pressurized oil to urge the lower roll toward the upper roll during treatment of workpieces of other than circular cross section.

3,626,733

TRUNCATED THROUGH FEED THREAD ROLLING DIE FOR ROLLING FLAT ROOTED THREADS

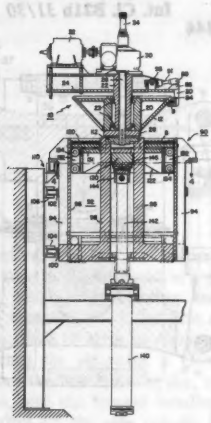
Elmer S. Zook, Princeton, and Paul W. Ronn, Gardner, Mass., assignors to Reed Rolled Thread Die Co., Holden, Mass.

Filed Mar. 26, 1969, Ser. No. 810,485
Int. Cl. B21h *3/04*; B23g *7/00*
U.S. Cl. 72—104 **21 Claims**



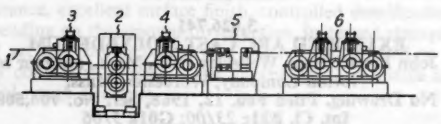
A through feed thread rolling die which acting in cooperation with one or more identical dies will produce so called Acme or similar threads on a work piece. The threads on the relieved starting section in which the root diameter is constant have a novel constantly changing cross section. The crests of the threads considered in longitudinal section are flat and lie in the surface of a truncated cone. The flanks of the threads that first contact the work are at a relatively wide angle so that good starting thread formation is produced in the work. As the thread on the die increases in diameter, the flanks assume a dual angularity with the wide angled flanks merging with steep inner flanks. When the tapered starting relief section reaches the full diameter intermediate dwell section, the wide angled flanks will have gradually disappeared to be replaced by the steep flanks of Acme configuration.

3,626,734
BAR COILER
Richard Kotler, Monroeville, Pa., assignor to Blaw-Knox Foundry & Mill Machinery, Inc., Pittsburgh, Pa.
Filed June 10, 1970, Ser. No. 44,917
Int. Cl. B21d *7/04*; B21f *3/04*
U.S. Cl. 72—139 **13 Claims**



A machine for the coiling of bars including a rotating mandrel having a conical surface and means for holding the bar being coiled against said surface for a substantial arc so as to bend the bar to form the coil. As the bar is being fed through the coiler, the holding means is moved axially back and forth along the conical surface to progressively vary the radius of curvature of the bar as it is being formed.

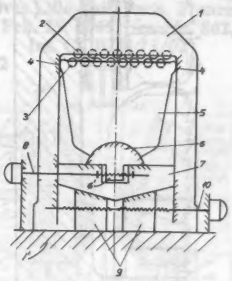
3,626,735
WORKING OF METAL STRIP
Pierre M. Lebourg, Le Vesinet, and Pierre S. Rasser, Paris, France, assignors to Wean Industries, Inc., Youngstown, Ohio
Filed Oct. 29, 1969, Ser. No. 872,215
Int. Cl. B21b *15/00, 39/08*
U.S. Cl. 72—161 **5 Claims**



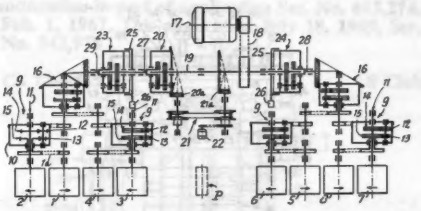
The invention concerns the working of metal strip and is original in the fact that it comprises a temper mill located between an entry drag bridle and a pulling bridle followed by a roller leveler and a second exit pulling bridle, and more particularly the driving of the rolls of the bridles and temper mill in synchronism by a common source.

3,626,736
SHEET- AND STRIP-FLATTENING MACHINE
Curt Munchbach, Pforzheim-Sonnenberg, Germany, assignor to Irma Ungerer, geb. Dollinger, Pforzheim, Germany
Filed Jan. 17, 1969, Ser. No. 791,979
Claims priority, application Germany, Mar. 14, 1968, P 16 52 644.6
Int. Cl. B21d *1/02*
U.S. Cl. 72—165 **2 Claims**

A frame has vertical guideways spaced apart in a predetermined horizontal direction. Two guide members which are cylindrically curved are formed with surfaces which are at least a part of a surface of revolution centered on a generally horizontal axis that is transverse to said predetermined direction. The guide members are mounted in said frame on opposite sides thereof for adjustment in a vertical direction and generally in the direction of said axis. A yoke is disposed between and in slidable engagement with said guideways and formed on opposite sides of said frame with surfaces conforming to and resting on said surfaces of said guide members to support said yoke. A set of lower rolls extending generally horizontally and transversely to said predetermined direction is carried by said yoke.



3,626,737
BRIDLES
Paul A. Defontenay, Bourg-la-Reine, France, assignor to Wean Industries, Inc., Youngstown, Ohio
Filed Oct. 29, 1969, Ser. No. 872,214
Claims priority, application France, Dec. 27, 1968, 181,159
Int. Cl. B21b *39/08*
U.S. Cl. 72—205 **10 Claims**

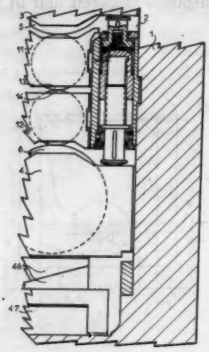


The invention concerns a device which places tension on a metal strip by pulling the latter by means of pulling rolls of a pulling bridle through drag rolls of a drag bridle, each of the pulling and drag rolls being coupled to a following roll by means of a differential, and all rolls being driven by a common motor.

3,626,738
PRE-STRESSED MILL ROLLS WITH REVERSE LOADING
Lucien Diolot, Neuilly, France, assignor to Societe Nouvelle Spidem, Paris, France
Filed Apr. 11, 1969, Ser. No. 815,290
Claims priority, application France, Apr. 11, 1968, 147,831
Int. Cl. B21b *31/32*
U.S. Cl. 72—237 **9 Claims**

A gap adjusting device for an inverted screw-down pressure pre-stress rolling mill enabling compensation for

possible variations in the said gap when rolling mill cylinders are replaced, including a jack having upper and lower rams adjustably secured to one another to selectively adjust the length of the jack, one of said rams being of selectively variable length in response to applied pressure fluid.

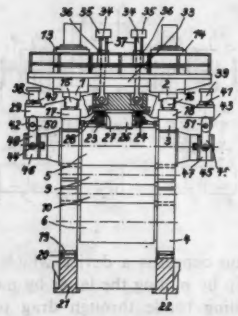


3,626,739

APPARATUS FOR ROLL COUNTER-DEFLECTION IN ROLLING STANDS

Horst Willeke, Dusseldorf, and Karl-Heinz Simon, Langenfeld, Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed July 8, 1969, Ser. No. 839,899
Claims priority, application Germany, July 10, 1968, P 17 52 752.5
Int. Cl. B21b *13/14, 29/00, 31/32*
U.S. Cl. 72—241 **3 Claims**



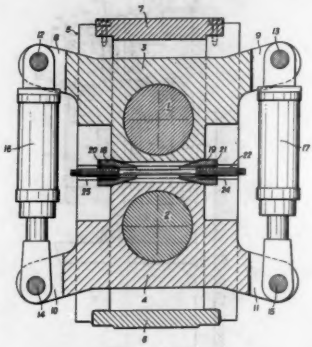
A rolling stand, especially a two-high or a four-high rolling stand, has a downward rolling pressure onto a roll, which pressure is absorbed by the stock when present and by the roll bearings. The present invention is to avoid excess load on the bearings and their mountings for a given rolling pressure by counter-deflecting the roll. A cross beam of the roll stand is parallel and above the roll and back-up rolls are provided to space the cross beam from the roll; deflecting devices are provided to connect the corresponding ends of the roll and cross beam, so that operation of the deflecting devices urges together said corresponding ends.

3,626,740

APPARATUS FOR SHAPING METAL BARS

Ernst Hinterholzl, Linz, Austria, assignor to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed July 24, 1969, Ser. No. 844,321
Claims priority, application Austria, Apr. 23, 1969, A 3,913/69
Int. Cl. B21b *31/30*
U.S. Cl. 72—244 **4 Claims**



In an apparatus for shaping metal bars, particularly castings immediately supplied from a continuous casting plant, comprising a series of rolling stands in tandem arrangement containing pairs of rolls, in which the rolls are arranged by means of inserts, easy and accurate alignment of the roll gaps in the direction of rolling is achieved according to the invention by providing for each roll of a pair of rolls being adjustable away from and towards the roll pass axis in that the two inserts of a pair which are slidingly arranged within common vertical or horizontal guide means, are interconnected and urged against interposed wedges by hydraulic means exerting a pressure exceeding the maximum roll pressure that may occur, said wedges being interconnected to be relatively movable by a threaded spindle so as to change the distance between said inserts and thereby the roll gap.

3,626,741

EXTRUDED ARC CAST MOLYBDENUM

John Lowell Ham, Wellesley Hills, Mass., assignor to Norton Company, Worcester, Mass.

No Drawing. Filed Feb. 12, 1968, Ser. No. 704,508
Int. Cl. B21c *23/00;* G01k *5/06*
U.S. Cl. 72—253 **6 Claims**

Arc cast molybdenum billets are extruded at a starting temperature of about 1000° F. through a 10 to 1 reduction without excessive-extrusion pressure to produce sound extruded bars with excellent surface quality and little die wear.

3,626,742

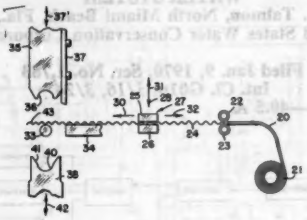
COLORIMETRIC OXYGEN DETECTOR

John P. Hogan and Donald R. Witt, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed July 24, 1969, Ser. No. 844,615
Int. Cl. C07d *103/00, 105/00;* G01n *31/22*
U.S. Cl. 23—232 R **7 Claims**

A process for detecting the presence of free oxygen and oxides of sulfur and nitrogen in a gaseous stream which comprises contacting the reaction product of the reduction of an organo-transition metal compound with a metal hydride or an alkyl, the reduction compound containing the transition metal in a lower valence state, with the oxygen-containing gas to produce a color change in the reaction product.

3,626,743
MAKING CORRUGATED ELASTIC SHIMS
Hans W. Koch, Levittown, Pa., assignor to Roller Bearing Company of America, West Trenton, N.J.
Filed Dec. 22, 1969, Ser. No. 887,463
Int. Cl. B21d *31/02, 43/10, 37/18*
U.S. Cl. 72—330 7 Claims

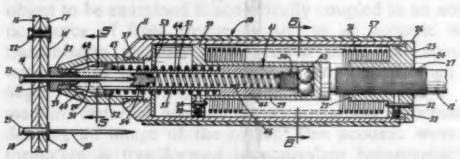


In bending corrugated strip to make a corrugated elastic shim, a continuous strip is fed forward in a space between a circular mandrel and a first bending and cutting die cooperating with a mandrel, and the first die is moved forward to cut off a piece of strip in cooperation with an anvil and bend it into the shape of a U with the ends protruding away from the first bending die, without crushing the corrugations, and the second bending die cooperating with the mandrel on the side remote from the first bending die is moved forward to bend the piece of strip into a curved, circular or multisided shape without crushing the corrugations. In the preferred embodiments the bending dies and the mandrel grip the corrugated strip at the edges.

3,626,744
SMOOTH HIGH TOLERANCE POROUS TUBE AND PROCESS FOR MAKING
Frederick J. Sorgenfrei, Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Filed Aug. 28, 1969, Ser. No. 853,972
Int. Cl. B21k *21/00*
U.S. Cl. 72—367 8 Claims

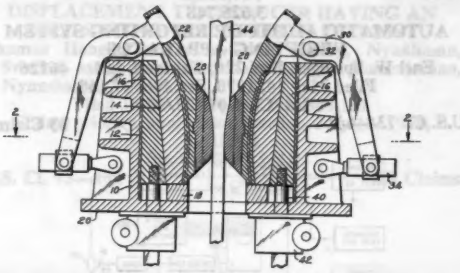
Several beneficial properties are achieved by centripetally mechanically working as by rotary swaging of porous metal tubing particularly prepared from sintered powdered metals. These include excellent dimensional tolerance, excellent surface finish, controlled densification depending on the amount of reduction, increased strength and yet the overall porosity of the tube is retained to a very considerable extent. The internal surface retains its initial rough structure.

3,626,745
RIVET GUN ACCESSORY
Russell F. Richardson and Gregory A. Richardson, St. Paul, Minn., assignors to The Richline Company, Incorporated, St. Paul, Minn.
Filed Dec. 1, 1969, Ser. No. 881,143
Int. Cl. B21d *9/05*
U.S. Cl. 72—391 8 Claims



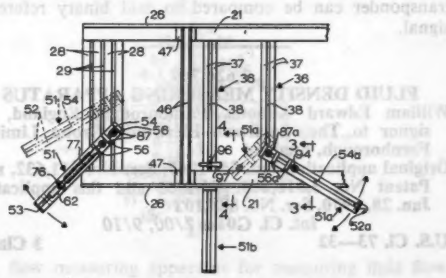
A rivet setting accessory for the setting of blind rivets for use in conjunction with a standard power unit, such as an electric drill. The operator's hand gripping the barrel of the rivet setting gun functions as a clutch holding the barrel stationary while the rotary motion supplied by the power drill advances a plunger causing jaws to grip the mandrel of a rivet, set the rivet, detach the mandrel from the set rivet and eject the spent mandrel.

3,626,746
WORK REDUCING AND SHAPING APPARATUS
Joseph Pietryka, Paris, France, assignor to Fives Lille-Cail, Paris, France
Filed Feb. 25, 1969, Ser. No. 802,089
Int. Cl. B21j *13/02*
U.S. Cl. 72—402 10 Claims



A perimetric frame adapted for passing slender work such as a continuous casting therethrough. Blocks in the frame provide guide surfaces which are convergent in the direction of movement of the work. Work engaging shoes are slidable along the convergent guide surfaces so as to cross-sectionally reduce the work as it passes through the frame in step-by-step manner by reciprocation of the shoes. Wedges are slidably interposed between the frame and the blocks to move the shoes transversely into and out of engagement with the work.

3,626,747
ATTACHMENTS FOR FRAME STRAIGHTENING MACHINE
Robert J. Rouis, San Mateo, Calif. (% Align Rite, Inc., 2277 Shafter Ave., San Francisco, Calif. 94124)
Continuation-in-part of application Ser. No. 613,274, Feb. 1, 1967. This application July 18, 1969, Ser. No. 842,978
Int. Cl. B21j *9/18*
U.S. Cl. 72—453 8 Claims



A vehicle frame straightening machine has a flat, rigid base formed of longitudinal side rails and transverse front and rear ends, the latter formed with parallel vertical slots. The side rails are formed with inward facing horizontal slots which receive the ends of transverse vertically slotted horizontal rails fitting between the side rails and longitudinally movable with respect thereto. The attachment is formed with a vertical longitudinal slot. It may be attached to either the front or rear end by resting same upon the end and inserting bolts through the slot in the attachment and through different slots in the end. By sliding the bolts laterally of the base the lateral position of the attachment is adjusted and by

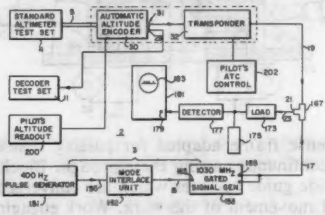
swinging the attachment in an arc, permitting the bolts to slide in the slots and then tightening nuts on the ends thereof the attachment is fixed in diagonal position. Similarly, a bolt may be inserted through the attachment slot in the transverse rail slot and also a hook through the attachment slot to engage the side rail to locate the attachment at a diagonal. Means is provided to apply diagonal pulls to a vehicle frame on the base. Also an underslung attachment may be supported below the base.

3,626,748

AUTOMATIC ALTITUDE REPORTING SYSTEM VERIFYING APPARATUS

Earl W. Springer, Box 220, Fairland, Ind. 46126

Filed May 14, 1970, Ser. No. 37,168
Int. Cl. G01l *22/00*
U.S. Cl. 73—4 R **23 Claims**



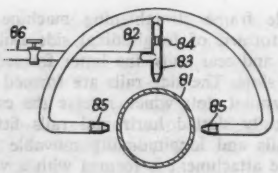
An apparatus for verifying the output of an aircraft transponder combined with an automatic altitude encoding means, the apparatus comprising an altimeter test set including means for generating negative pressures, a calibrated altimeter for measuring said pressure in units of altitude, means for applying these pressures to the altitude encoding means, an altitude decoder test set including encoder means for generating a binary reference signal corresponding to the altitude equivalent of the pressure applied to the said altitude encoding means and means for simultaneously displaying, for comparison, said binary reference signal and the binary signal from said altitude encoding means, and means for interrogating such a transponder including means for generating a transponder interrogating signal and means for displaying the signal generated by the transponder in response to said interrogating signal, whereby the signal generated by the transponder can be compared to said binary reference signal.

3,626,749

FLUID DENSITY MEASURING APPARATUS

William Edward Abbotts, Farnborough, England, assignor to The Solartron Electronic Group Limited, Farnborough, England

Original application Jan. 25, 1967, Ser. No. 611,632, now Patent No. 3,516,283. Divided and this application Jan. 28, 1970, Ser. No. 888,102
Int. Cl. G01m *7/00, 9/10*
U.S. Cl. 73—32 **3 Claims**



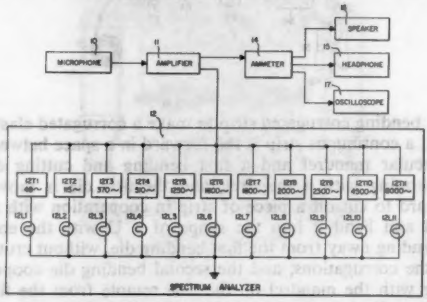
A fluid density measuring apparatus includes an elastically resilient hollow vibratory tube which can be contacted by a fluid, the density of which is to be measured. A pneumatic embodiment thereof includes pulsation means for supplying a pressurized fluid against the external surface of the tube to excite the tube into natural vibration.

3,626,750

LEAK DETECTION IN UNDERGROUND WATER SYSTEM

Clarence A. Talmon, North Miami Beach, Fla., assignor to United States Water Conservation Corporation, Miami, Fla.

Filed Jan. 9, 1970, Ser. No. 1,783
Int. Cl. G01m *3/16, 3/24*
U.S. Cl. 73—40.5 A **3 Claims**



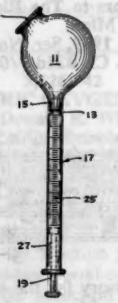
A method for accurately locating leaks in underground water, gas, or like fluid, systems which includes the steps of detecting leak-frequency sound signals at a plurality of randomly selected locations on the underground system, converting the same to electrical signals, observing and selecting the predominant leak-frequency electrical signals and measuring the selected signals at a plurality of locations on the underground system, observing the two locations that yield electrical signals of greatest intensity at the selected leaf frequency, averaging the low-magnitude limit values of said signals of greatest intensity and ignoring the high-magnitude peak values, and determining the proportional relationship between said average low-magnitude values as a function of a reference value to determine the distance from the midpoint between the two locations to the leak location.

3,626,751

DEVICE AND METHOD FOR MEASURING OIL IN WATER

Charles J. Overbeck, Palos Heights, and Jay C. Means, River Forest, Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Filed Dec. 11, 1969, Ser. No. 884,229
Int. Cl. G01n *33/18, 25/14*
U.S. Cl. 73—61.1 R **6 Claims**

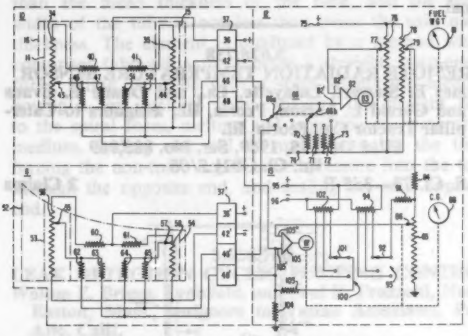


A device and method for the convenient analytical determination of oil-in-waste water using a funnel-syringe device and a low boiling solvent.

3,626,752
FUEL MANAGEMENT SYSTEM

Dave B. Levins, Swampscott, Mass., assignor to General Electric Company

Continuation of application Ser. No. 528,584, Feb. 18, 1966. This application May 27, 1968, Ser. No. 739,973
Int. Cl. G01m 1/12
U.S. Cl. 73—65 7 Claims

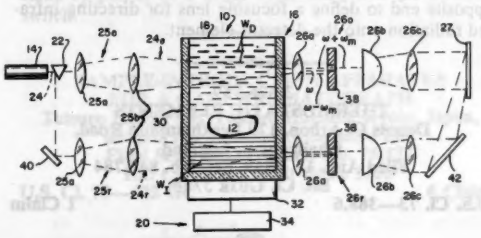


A fuel management system for indicating aircraft center of gravity. Fuel probes in each fuel tank produce an electrical signal which varies in accordance with the fuel level at each proble. This signal is converted by scaling resistors to produce a liquid weight current signal and a liquid weight moment signal. Servo means and amplifiers are energized by these two current signals to obtain the total aircraft liquid weight and moment and to indicate the aircraft center of gravity.

3,626,753
ACOUSTO-HOLOGRAPHIC METHOD AND APPARATUS FOR INTERNALLY IMAGING AND INTERFEROMETRICALLY ANALYZING OBJECTS

Robert Aprahamian, Culver City, and Pravin G. Bhuta, Torrance, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Mar. 5, 1970, Ser. No. 16,636
Int. Cl. G01b 5/30; G01n 29/00
U.S. Cl. 73—88 A 12 Claims

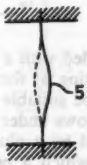


An acousto-holographic method of an apparatus for internally imaging and interferometrically analyzing objects, particularly objects which are optically opaque. The object to be examined is acoustically coupled to an acoustic source of fixed frequency and to an acoustic wave transmission medium in a manner such that acoustic wave energy from the source is transmitted through the object to the acoustic medium to produce within the medium distorted acoustic waves containing information defining an image of the object. This acoustic wave information is transformed to equivalent holographic information by a light-sound wave interaction involving passage of an object beam from a laser through the distorted acoustic waves to produce an object beam sideband of given order defining an image of the object, modulating a reference beam from the laser to obtain a reference beam sideband of the same order as the object sideband, and mixing the object and reference sidebands to produce a hologram for reconstructing a three-dimensional interior image of the object. The object may be strained after the initial exposure and the holographic film then reexposed to provide a hologram for reconstructing an interior three-dimensional image of the object displaying the internal stress pattern of the object.

3,626,754
DISPLACEMENT TRANSDUCER HAVING AN OSCILLATING TRANSMITTER ELEMENT

Thomas Haagen and Clas-Goran Skoog, Nynahamn, Sweden, assignors to Rederiaktiebolaget Nordstjernan, Nynashamn, Sweden

Filed July 9, 1969, Ser. No. 840,151
Claims priority, application Sweden, July 12, 1968, 9,615/68
Int. Cl. G01l 5/12
U.S. Cl. 73—141 A 28 Claims

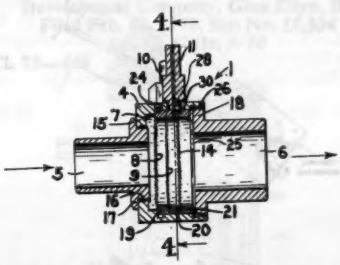


A transmitter element arranged to mechanically oscillate between fixed ends. The element takes the form of a rod, band or the like which is resistant to bending, and is curved in shape between its points of mounting. The transmitter element may be used for measuring forces, elongation, motion, etc. by monitoring changes in its oscillating frequency.

3,626,755
FLOW MEASURING APPARATUS

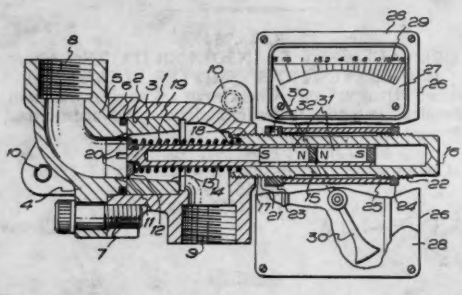
Hans Rudolph, Johnson County, Kans., assignor to Hans Rudolph, Inc., Kansas City, Mo.

Filed Apr. 9, 1970, Ser. No. 26,821
Int. Cl. G01f 1/00
U.S. Cl. 73—205 L 4 Claims



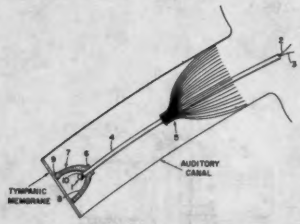
A flow measuring apparatus for measuring fluid flow comprises a housing having a bore therethrough and a fluid passage mounted on each end of the housing and communicating with the bore. An end screen is positioned within the housing and adjacent each of the fluid passages to effect laminar flow of fluid and an intermediate screen is positioned between the end screens to effect a measurable pressure differential adjacent opposite sides of the intermediate screen. A pair of spaced apart taps are mounted on the housing for connection to a differential pressure measuring instrument, and said taps being positioned on each side of the intermediate screen in communication with the space between the intermediate screen and the respective end screen.

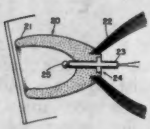
3,626,756
FLOWMETER
Cyril Marshall and Dennis A. Perry, Lenton, England, assignors to Conflow Limited
Filed Jan. 26, 1970, Ser. No. 5,719
Claims priority, application Great Britain, Jan. 29, 1969, 5,288/69
Int. Cl. G01f *1/00*
U.S. Cl. 73—207 **4 Claims**



A flowmeter is provided with a spring urging the valve member towards a seating at the smaller inlet end of a flow passage, so as to be suitable for use in any disposition or for measuring flows under high pressures, and the valve member is carried by a plunger including opposed magnets by means of which a pointer is moved over a scale without any mechanical connection with the valve member, thereby enabling the pointer and scale to have a mounting rotatable about the axis of the plunger to bring the scale to a convenient position for reading regardless of the disposition of the flowmeter.

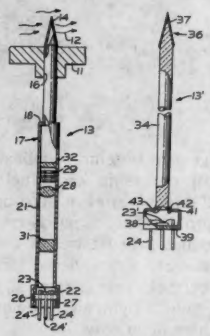
3,626,757
EAR THERMOMETER
Theodor H. Benzinger, 6607 Broxburn Drive, Bethesda, Md. 20034
Filed Oct. 24, 1967, Ser. No. 677,794
Int. Cl. G01j *5/12;* **G01k** *13/00*
U.S. Cl. 73—355 R **2 Claims**





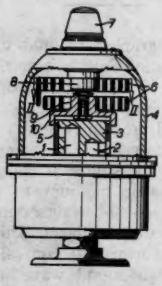
This clinical ear thermometer, devised to measure the temperature of the tympanic membrane in man or animals, includes a hollow, cuplike member which has an inner reflecting surface. The opening of this cup has a soft edge, preferably made of deformable material, for gentle, transitory contact with the tympanic membrane. In the optical focal area of the cup, near its bottom, the sensing portion of a temperature measuring device is located. The sensing tip is responsive to infrared in the region of animal or human body temperature. The cup is accommodated at the distal end of a flexible stem which is as long as or longer than the ear canal, and this stem accommodates means for bringing the temperature signal out of the ear canal for recording. The stem also serves for the safe introduction without undue pressure and for the safe removal of the cup from the ear canal.

3,626,758
REMOTE RADIATION TEMPERATURE SENSOR
James E. Stewart, Lafayette, La., and Duane E. Evans and Gerald L. Larson, Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Dec. 15, 1969, Ser. No. 885,069
Int. Cl. G01j *5/08*
U.S. Cl. 73—355 R **2 Claims**



A semiconductor element of the kind which produces an electrical signal which is a function of the intensity of incident infrared radiation is disposed at one end of a thin tubular body having a tip at the opposite end which may be disposed in a high temperature environment. The tip has a conical configuration to approximate blackbody characteristics and emits thermal radiation towards the detector through a system of collimators and lenses within the tube. In another embodiment, the body of the device may be a solid quartz or sapphire rod having a conical radiation opaque tip at one end and having a concave opposite end to define a focusing lens for directing infrared radiation onto the detector element.

3,626,759
THERMOSTATIC ELEMENTS
Dennis C. Arbon, 179 Leckhampton Road, Cheltenham, England
Filed Aug. 11, 1969, Ser. No. 848,784
Int. Cl. G01k *5/38*
U.S. Cl. 73—368.6 **1 Claim**



A thermally sensitive element comprising a sealed, spiral, metal tube which is filled with a non-toxic liquid under pressure and which, in cross section, is formed

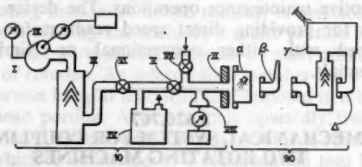
with an opposed pair of narrower, curved walls having concave internal surfaces, and with an opposed pair of wider walls having flat and parallel portions, the said walls are of the same uniform thickness, the internal radius of the narrower walls is not less than twice and not more than five times the wall thickness, the width of the parallel portions of the wider walls is not less than the mean thickness of the tube, and the mean width of the tube is not less than twice the said mean thickness. The element is produced by a method which comprises fabricating the tube in a straight, open-ended form, filling the tube with a solid supporting medium having a low melting point, shaping the straight tube to the spiral form, melting and expelling the supporting medium, sealing one end of and evacuating the tube, forcing the non-toxic liquid under pressure into the tube through the opposite end, and sealing the said opposite end.

3,626,760

LEAK DETECTION CYCLIC PUMPING CONTROL

Walton E. Briggs, Lynnfield, and Paul R. Fruzzetti, North Easton, Mass., assignors to Varian Associates, Palo Alto, Calif.

Filed July 16, 1969, Ser. No. 842,169
Int. Cl. G01m *3/00*
U.S. Cl. 73—40.7 **19 Claims**



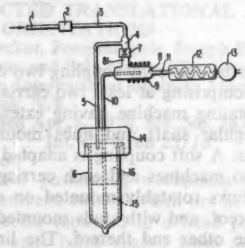
Mass spectrometer leak detector (or vacuum apparatus) generally controlled in its pumping cycles by solenoid operated roughing and isolation valves and utilizing roughing line suction for effective operation of the roughing valve in opening and sealing. The roughing valve is also used for test port air release in conjunction with sealing of the roughing valve per se. Automatic, pressure-responsive, control of the system is provided to allow complete control of pump-down, test air release and stand-by phases of a single cycle using a single electrical switch.

3,626,761

SAMPLE-INTRODUCTION APPARATUS FOR A GAS-CHROMATOGRAPH

Tatsuro Haruki and Yoshiro Hayashi, Kyoto, Japan, assignors to Shinadzu Seisakusho Ltd.

Filed Sept. 24, 1970, Ser. No. 75,172
Int. Cl. B01d *15/08*; G01n *1/00*
U.S. Cl. 73—422 GC **6 Claims**



A sample-introduction apparatus capable of introducing an accurate and fully controllable flow of a liquid-state sample into its vaporizer, by means of an intentional opening and closing operation of the valve, unaffected by pressure change of the carrier-gas or temperature change of the sample, in which a pressure-balancing tube is provided to connect the inlet port of the valve to the gaseous space over the liquid-state sample in the sample container.

3,626,762

METHOD AND APPARATUS FOR FILLING A CAPILLARY TUBE WITH LIQUID

Saul R. Gilford, Oberlin, Ohio, assignor to Gilford Instrument Laboratories, Inc., Oberlin, Ohio

Filed Aug. 12, 1969, Ser. No. 849,371
Int. Cl. G01n *1/14*
U.S. Cl. 73—425.6 **10 Claims**

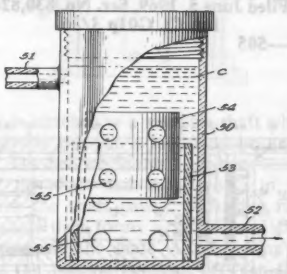
An evacuated length of accurately sized bore capillary tubing with sealed ends is scored adjacent one end, supported in a break-off member on the opposite side of said score from said one end, immersed in a sample fluid, and the length of tubing pushed axially against a wedge surface of the break-off member so as to strain the score laterally thereby cleanly breaking off the one end below the surface of the sample fluid. Vacuum draws the fluid into the length of tubing which can then be cut into accurate short lengths each containing a known volume of the sample fluid.

3,626,763

SPECIFIC GRAVITY MEASURING DEVICE

Fred K. White, Glen Ellyn, Ill., assignor to Mulwhiteson Development Company, Glen Ellyn, Ill.

Filed Feb. 18, 1970, Ser. No. 12,334
Int. Cl. G01n *9/10*
U.S. Cl. 73—440 **3 Claims**

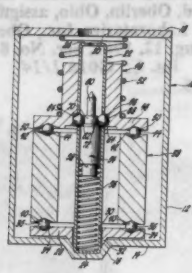


This invention relates to a device for determining principally the changes in specific gravity of a fluid on a continuous basis. The device includes a vertically extending chamber containing a plurality of floatable elements. Each element is adapted to float at a different specific gravity. As fluid passes through the chamber, first one and then another element will float or settle, depending upon the specific gravity of the fluid. Changes in specific gravity of the fluid will be indicated by the rise or fall of the elements in the fluid.

3,626,764
MULTIDIRECTIONAL INERTIAL SENSOR

Otakar P. Prachar, Santa Barbara, Calif., assignor to General Motors Corporation, Detroit, Mich.

Filed July 27, 1970, Ser. No. 58,212
Int. Cl. G01p 15/02
U.S. Cl. 73—492 7 Claims

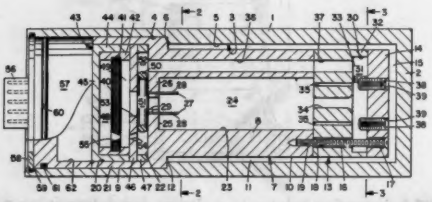


A cylindrical support has a hollow tubular axial guide mounted on an end wall thereof. An operator is slidably mounted within the guide and spring biased toward actuated position. Balls mounted within radial openings of the guide engage a radially tapered shoulder of the operator to hold the operator in normal position against movement. The balls are held in engagement with the operator shoulder by a retainer slidably mounted on the guide and spring biased axially opposite to the operator. An annular seismic mass surrounds the guide and fits between the retainer and an end wall of the support. Three equally circumferentially spaced conical depressions in each end of the mass mate with like depressions in the retainer and in the support. Each pair of mating depressions receives a ball. When the mass receives an acceleration pulse of predetermined amplitude and time, it shifts radially of the guide, and the camming action of the balls moving within the conical depressions shifts the retainer axially against its spring bias to release the balls from the operator shoulder and in turn release the operator.

3,626,765
FLUID JET DEFLECTION TYPE INSTRUMENT

Alvin G. Moore, Cumberland, and Wilfred C. Schuemann, Rawlings Heights, Rawlings, Md., assignors to Hercules Incorporated, Wilmington, Del.

Filed June 5, 1969, Ser. No. 830,824
Int. Cl. G01p 3/26
U.S. Cl. 73—505 10 Claims

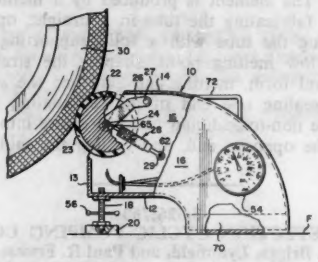


An instrument wherein the deflection of a fluid jet, induced for example by the angular movement of the instrument, produces a signal proportional to the deflection, and particularly such an instrument that is substantially self-contained to provide a closed fluid circuit that is relatively insensitive to transient temperature differentials, and in which the overall dimensions of the instrument have been minimized.

3,626,766
PORTABLE SPEEDOMETER

Donald E. Waldecker, Fairfax, Va., assignor to RAM Enterprises, Incorporated, Falls Church, Va.

Filed July 20, 1970, Ser. No. 56,382
Int. Cl. F16h 37/04; G01c 25/00
U.S. Cl. 74—12 10 Claims

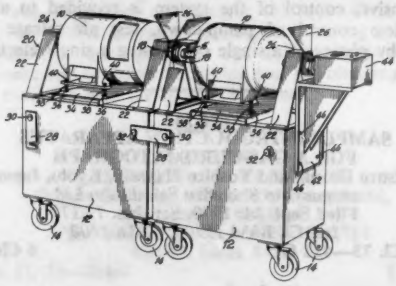


A portable device for testing speedometers on automobiles, trucks and other similar land vehicles, and for indicating wheel speed during wheel balancing and other automotive maintenance operations. The device includes means for providing direct speed readings for vehicles equipped with either conventional or "limited-slip" differentials.

3,626,767
MECHANICAL SYSTEM FOR COUPLING TWO ROTATING MACHINES

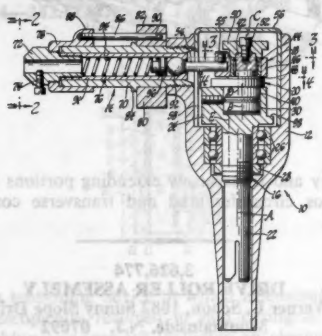
Theodore Wildi, Quebec City, Quebec, Canada, assignor to Lab-Volt (Quebec) Limited, Quebec City, Quebec, Canada

Filed July 16, 1970, Ser. No. 55,438
Int. Cl. F16m 3/00
U.S. Cl. 74—16 11 Claims



A system for mechanically coupling two or more rotating machines comprising at least two carriages each supporting one rotating machine having extensions at both ends of its regular shaft and hubs mounted on such shaft extensions. A soft coupling is adapted to mate with the hubs of two machines and each carriage is provided with notched links rotatably mounted on each side and at one end thereof, and with studs mounted one on each side and at the other end thereof. The links and studs are designed and located so that the notches in the links of one carriage engage the studs in the other carriage so as to couple the carriages end to end in such a way that the soft coupling between the two hubs of each machine permits to mechanically couple the two rotating machines.

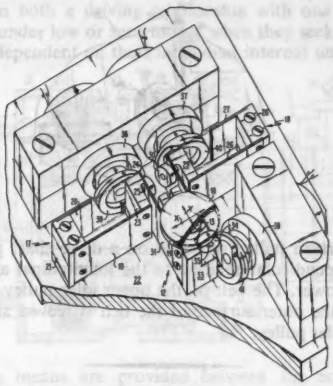
3,626,768
TOOL DRIVE ASSEMBLY
Joseph J. Dancsik, Oak Park, Mich. (Rosenheingasse 9, Graz, Austria)
Filed Sept. 2, 1969, Ser. No. 854,372
Int. Cl. F16h *21/22*
U.S. Cl. 74—44 **19 Claims**



A tool drive assembly for converting rotary motion to reciprocating motion. A driven member is rotatably supported in a housing and includes a shank portion and an enlarged head portion with a center of mass offset from the axis of rotation. An intermediate member has a cylindrical portion integral therewith and disposed in a hollow in the head portion. A peg extends upwardly from the intermediate member and forms a part of a connection means which is connected to a reciprocating tool holder member. The intermediate member and the connection means have counterbalancing masses which, in combination with one another, counterbalance the offset mass of the head portion during all adjusted rotary positions of the intermediate member relative to the driven member, which in turn adjusts the length of the stroke of the tool holder member. A tool holder assembly includes a tubular member extending from the housing with a dust cover attached to the tool holder member and slidably and reciprocally disposed about the exterior of the tubular member. A drive means interconnects the tool holder member and the connection means for transmitting the reciprocating motion. A knurled member is disposed about the tubular member adjacent the housing and is connected to the dust cover by a shaft slidably disposed in the knurled member for rotatably adjusting the position of the tool holder member.

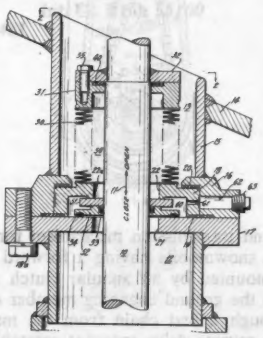
3,626,769
APPARATUS FOR POSITIONING WORKPIECES IN SELECTED TRANSLATIONAL AND ROTATIONAL ORIENTATIONS
Edward P. Hecker, Poughkeepsie, Joseph E. Kulak, Hopewell Junction, and Bela Musits, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 6, 1970, Ser. No. 26,007
Int. Cl. F16h *25/16*
U.S. Cl. 74—54 **21 Claims**

Apparatus for positioning workpieces including three leaf spring members, two of which are in alignment, one end of each being mounted in a fixed position and the other or free ends being spaced from and facing each other. A third member substantially perpendicular to the other two aligned members is mounted on the free ends of both of said other members. Accordingly, the first two members are deflectable about fixed pivots while the third member is deflectable about a floating pivot formed by the free ends of the first two members. The apparatus also includes first and second means for applying linear forces respectively to said first and second members, which forces are substantially perpendicular to a first coordinate axis,



and means for applying to said third member a linear force which is substantially perpendicular to a second coordinate axis. The resulting displacement of the third spring member is applied to the workpiece being oriented.

3,626,770
BACK-UP SEAL FOR BELLOWS
Roy W. Lindberg, Sierra Madre, and James R. McCloud, Burbank, Calif., assignors to I-T-E Imperial Corporation, Philadelphia, Pa.
Filed Jan. 30, 1970, Ser. No. 6,997
Int. Cl. F16j *15/52*
U.S. Cl. 74—18.2 **6 Claims**

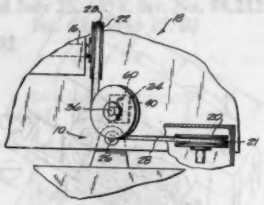


A bellows is attached to a movable shaft which extends through a barrier between a high-pressure and low-pressure region. The bellows forms a seal between the outer diameter of the shaft and the opening in the barrier through which the shaft passes. A sealing ring formed around the shaft then forms a second seal between the bellows interior and the shaft. A monitoring channel is connected to the volume bounded between the back-up seal and the bellows interior.

3,626,771
V-BELT DRIVE
Lloyd A. Luedtke, P.O. Box 123, Allenton, Wis. 53002
Filed Feb. 9, 1970, Ser. No. 9,508
Int. Cl. B65g *31/02*; F16h *7/24*
U.S. Cl. 74—219 **8 Claims**

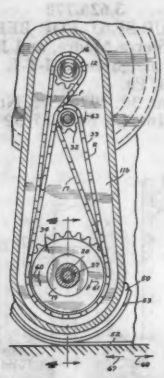
Disclosed herein is a belt drive idler assembly including a pair of idler pulleys mounted in a vertically spaced

relation in a position eccentric to the axis of pivotal connection between a baler and a bale thrower and an endless belt reeved around the idler pulleys, a drive pulley mounted on a longitudinally extending drive shaft on the baler



and a driven pulley mounted on a drive shaft positioned in a perpendicular relation to the longitudinal axis of the bale thrower. The belt on the upper idler pulley is twisted so that the outer surface of the belt is reeved around the upper idler pulley.

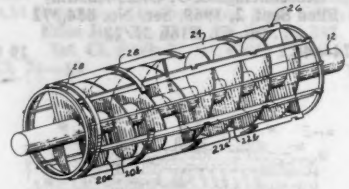
3,626,772
VEHICLE TRANSMISSION APPARATUS
Ralph T. Gutzmer, North St. Paul, Minn., assignor to Main Tool & Mfg. Co., Minneapolis, Minn.
Filed Feb. 2, 1970, Ser. No. 7,758
Int. Cl. F16h *7/10*; F16d *19/00*
U.S. Cl. 74—220 **18 Claims**



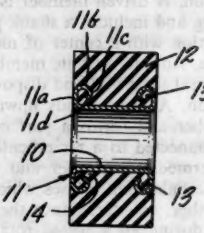
Clutch and transmission mechanism for a vehicle, for example, a snowmobile having a forward drive sprocket rotatably mounted by an annular clutch member which is keyed to the ground engaging member drive shaft and driven through a first chain from the main drive shaft sprocket, a reverse drive sprocket rotatably mounted by the annular clutch member and driven by a second chain that in turn is driven by a sprocket that is rotated in a direction opposite the main shaft from a chain tightener sprocket for the first chain, and operated mechanism for moving a clutch shifter member between a neutral position, a forward drive position that the forward sprocket drives the annular clutch member and a reverse drive position that the reverse sprocket drives the annular clutch member.

3,626,773
SELF-CLEANING PULLEY
Fredrick L. Loeffler, 18016 Norwell Ave., Cleveland, Ohio 44135
Filed May 6, 1970, Ser. No. 35,124
Int. Cl. F16h *57/04*
U.S. Cl. 74—230 **7 Claims**

A self-cleaning pulley having a shaft with screw means mounted thereon. A belt engaging surface is provided by members disposed on the outer periphery of the screw means. The belt engaging surface has continuous circumferentially and transversely extending portions to provide continuous circumferential and transverse contact with the belt.

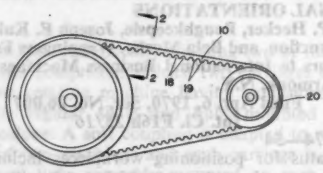


3,626,774
DRIVE ROLLER ASSEMBLY
Werner C. Schon, 1082 Sunny Slope Drive, Mountainside, N.J. 07092
Filed July 27, 1970, Ser. No. 58,220
Int. Cl. F16h *55/36*
U.S. Cl. 74—230.3 **5 Claims**



A resilient drive roller assembly and a method of making same in which the resilient roller is molded onto an annular carrier which has curled back ends forming toroidal locking cavities which lock the resilient roller thereon.

3,626,775
METHOD OF DETERMINING NOTCH CONFIGURATION IN A BELT
Kay V. Gentry, Littleton, Colo., assignor to The Gates Rubber Company, Denver, Colo.
Filed Oct. 7, 1970, Ser. No. 90,197
Int. Cl. F16g *5/16*, *5/00*
U.S. Cl. 74—233 **12 Claims**

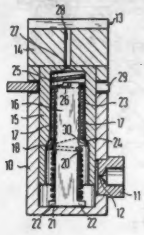


This invention relates to a mathematical determination of the parameters established for determining the configuration and spacing of notches in the compression section of power, motion or traction.

3,626,776
CHAIN TENSIONING DEVICE

Siegfried Staudinger, Munich, Manfred Klimiont, Geretsried, and Hermann Zollner, Munich, Germany, assignors to Joh. Winklhofer & Söhne, Munich, Germany

Filed Aug. 27, 1970, Ser. No. 67,521
Claims priority, application Germany, Sept. 15, 1969, P 19 46 651.4
Int. Cl. F16h 7/12, 7/10
U.S. Cl. 74—242.11 S 17 Claims

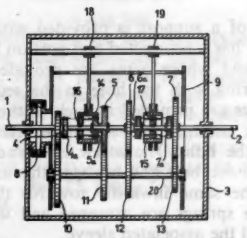


A chain tensioning device in which a tensioning member is telescopically received in said casing is provided with a locking arrangement including an elongated abutment member formed with two rows of receptacles extending in the direction of movement of the tensioning member and a detent dimensioned for simultaneous engagement with receptacles of the two rows. A spring in the casing biases the detent toward the open end of the casing, and the spring force is transmitted to the tensioning member by an interposed pressure transmitting member having a face for engagement with the detent and obliquely inclined relative to the direction of movement of the tensioning member.

3,626,777
GEAR TRANSMISSION WITH MULTIPLE POWER PATHS

Konrad Langenbeck, Mulheim (Ruhr), Germany, assignor to Rheinstahl Huttenwerke AG, Essen, Germany

Filed Jan. 8, 1970, Ser. No. 1,409
Claims priority, application Germany, Jan. 9, 1969, P 19 00 923.5
Int. Cl. F16h 3/08
U.S. Cl. 74—333 8 Claims



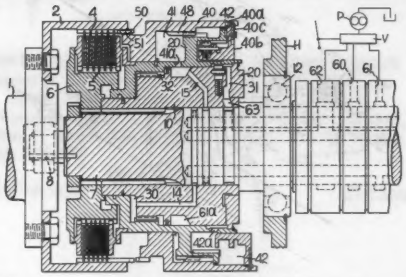
The input shaft of a gear transmission having several gear stages, is connected with the output shaft by a plurality of sets each of which has three gears so that power is transmitted in each stage of the transmission over three paths.

3,626,778
CENTERING MECHANISM FOR POWER TRANSMITTING MEANS

Alvin Clifford Holmes, Racine, Wis., assignor to Twin Disc, Incorporated, Racine, Wis.

Filed July 23, 1970, Ser. No. 57,617
Int. Cl. F16h 55/18
U.S. Cl. 74—409 8 Claims

Power transmitting means having a plurality of concentric driving parts which are connectible together by means of teeth or splines and between which the various clearances, tolerances, and eccentricities all contribute to result in an unbalance of the means. Satisfactory balancing of such means is virtually impossible when such means operate in both a driving relationship with one another and also under low or zero torque when they seek another position dependent on their individual internal unbalance.

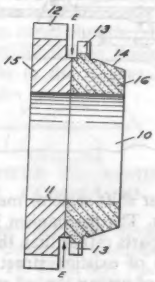


Centering means are provided between the concentric parts so as to keep the parts in a single and proper relationship to one another so as to reduce unbalance and/or permit balancing of the parts. The centering means comprises levers that are both centrifugally and spring loaded, and which urge the parts into proper and identical relationship with one another at zero or low torques and when they are operating under load.

3,626,779
GEAR AND METHOD FOR MAKING SUCH GEAR

Michael R. Howard, "Trojans" Great Oak, Hutton Brentwood, Essex, England

Filed Mar. 26, 1970, Ser. No. 22,965
Claims priority, application Great Britain, Apr. 5, 1969, 17,811
Int. Cl. F16h 55/00
U.S. Cl. 74—431 4 Claims



A gear formed from wrought and powdered metal, particularly a transmission gear, having gear teeth designed to engage a driving or driven gear and clutch teeth designed to couple the gear for rotation with the shaft on which it is freely mounted. Gear manufacturing method includes forming a first gear part with gear teeth from wrought metal, forming a second part from powdered metal and joining the two parts together.

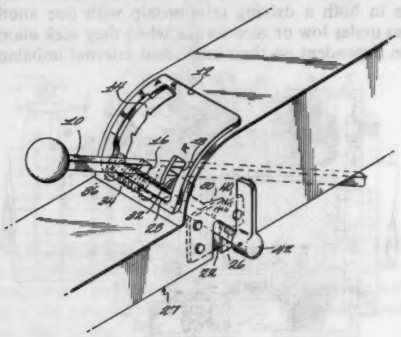
3,626,780
TRANSMISSION CONTROL QUADRANT AND LOCK ASSEMBLY

James E. Lowder and Gary D. Perry, Lubbock, Tex., assignors to Johnson Manufacturing Company, Lubbock, Tex.

Filed Jan. 30, 1970, Ser. No. 7,202
Int. Cl. G05g 9/02
U.S. Cl. 74—473 R 6 Claims

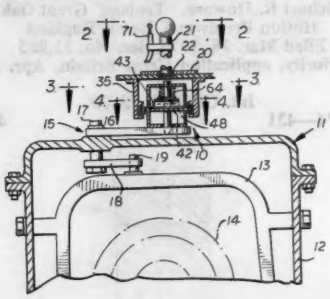
A guide and locking device for a movable control lever includes a slotted guide plate through which the lever

extends. A manually operated shaft carries a flange which upon rotation of the shaft to a lock position blocks movement of the lever out of a preselected guide slot. The shaft



is resiliently held in either its lock or unlock position by a spring biasing arrangement which urges the shaft in an axial direction so as to insert a second flange carried thereby into either a lock or unlock slot in a fixed plate.

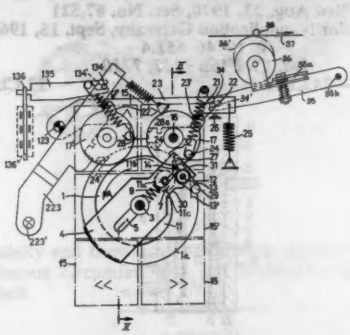
3,626,781
GEAR SHIFTER MECHANISM
Robert L. Moser, Columbia City, Ind., assignor to International Harvester Company, Chicago, Ill.
Filed Mar. 13, 1970, Ser. No. 19,376
Int. Cl. G05g *5/00*
U.S. Cl. 74—477 **14 Claims**



A sequential gear shift selector mechanism for a multi-speed transmission. The mechanism is formed principally of stamped metal parts rather than the precisely machined metal components of existing structures. The shifter includes a plurality of spring loaded pins, each of which is selectively and individually engageable with a respective one of the linkages for establishing one of a plurality of driving gear ratios upon movement of the shifter thereafter, and a cable actuated pin release ramp for raising simultaneously all of the pins while moving the shifter to effect engagement of another pin with its respective linkage.

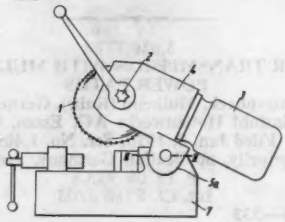
3,626,782
SERVO APPARATUS FOR MANUAL OPERATION OF A TAPE RECORDER
Imre Siller, Nuremberg, Germany, assignor to Grundig E.M.V. Elektro-Mechanische Versuchsanstalt, Furth am Bayern, Germany
Filed Apr. 16, 1970, Ser. No. 29,017
Claims priority, application Germany, Apr. 26, 1969, P 19 21 343.5
Int. Cl. G05g *13/02*
U.S. Cl. 74—483 PB **11 Claims**

A servo apparatus, which reduces the manual force required for the operation of the pushbuttons of a tape recorder, has a driven cam, and an operating member with a cam follower for moving an actuating lever to an operative position for starting an operation of the tape recorder. When any pushbutton is depressed, a coupling



means is placed in a position guiding a control lever on the respective operating member to a position engaging the actuating lever so that the operating member is blocked against rotation and is moved by the rotary cam to the operative position.

3,626,783
CIRCULAR SAW
Leopold Jägers, 1 Rudolf-Diesel-Strasse, 535 Euskirchen, Rhineland, Germany
Filed Apr. 9, 1970, Ser. No. 31,432
Int. Cl. B23d *45/04*
U.S. Cl. 83—490 **5 Claims**

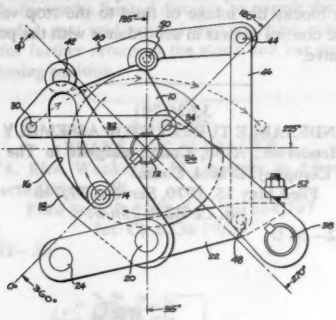


A section of a support is provided with a hole and a rocking lever has a bifuracted end portion which straddles the section and whose arms are provided with aligned bores registering with the hole in the section. a pair of conical sleeves are provided in each of the bores tapering towards one another and a bolt extends through the sleeves and the hole. The screw is threaded into an exposed end of the bolt and engages the associated sleeve for urging the same inwardly towards the other sleeve One or more springs are arranged and stressed between the screw and the associated sleeve.

3,626,784
LINKAGE SYSTEM
Burford L. Johnson, Dallas, Tex., assignor to Forney Engineering Company, Dallas, Tex.
Filed Oct. 20, 1969, Ser. No. 867,637
Int. Cl. G05g *1/00*; F16h *21/18*
U.S. Cl. 74—518 **7 Claims**

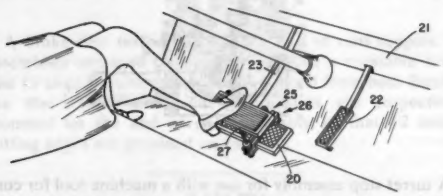
A linkage system for connecting an actuator to an output member, wherein a first linkage arm is connected to the output shaft of the actuator and oscillates in response to an input torque from the actuator output shaft, and a second linkage arm is connected between the first arm and the output member and applies an output torque to the output member in response to the oscillation of the first

arm. The effective lever arm of the first linkage arm is regulated so that the output torque to the output member



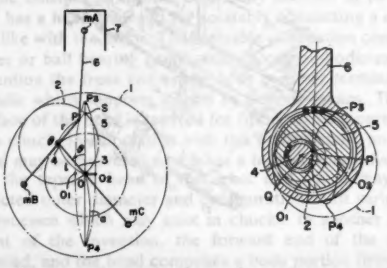
is at least equal to the input torque from the acuator output shaft.

3,626,785
UNIVERSAL PEDAL EXTENSION
John W. Ross, 109 North St., Georgetown, Mass. 01830
Filed Aug. 21, 1970, Ser. No. 65,923
Int. Cl. G05g *1/16*
U.S. Cl. 74—562 **7 Claims**



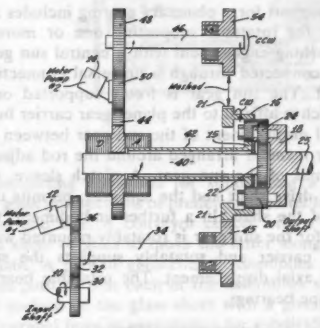
A pedal extension for increasing the height of a conventional foot pedal, such as the brake pedal of an automobile, has an extension plate supported by four inverted L-shaped, threaded legs, the ends of the legs being clamped on the brake pedal by two pairs of clamp bars. The legs pivot flatwise for shipment and are adjustable both laterally and longitudinally, when erected, to fit around foot pedals of any configuration and be permanently clamped thereon.

3,626,786
PISTON-CRANK MECHANISMS
Haruo Kinoshita, Hamamatsu-shi, and Isao Shirayanagi, Shizuoka-ken, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Hamakita-shi, Japan
Filed Jan. 26, 1970, Ser. No. 5,875
Claims priority, application Japan, Jan. 30, 1969, 44/6,903; Aug. 1, 1969, 44/60,875; Oct. 7, 1969, 44/95,749; Oct. 18, 1969, 44/83,450
Int. Cl. G05g *1/00*
U.S. Cl. 74—604 **5 Claims**



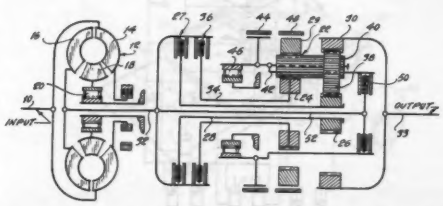
A piston-crank mechanism of the type comprising a piston disposed in a cylinder for reciprocal motion therein, a crank shaft rotatably mounted within a crank case and a connecting rod connecting said piston with said crank shaft. An internal gear is fixed in the crank case and a small gear having a number of teeth one half of that of the internal gear is rotatably mounted on the crank pin of the crank shaft. The connecting rod has one end pivotally connected to the piston and the other end pivotally connected to the small gear.

3,626,787
CONTINUOUSLY VARIABLE TRANSMISSION
Robert B. Singer, Palos Verdes, Calif., assignor to White Motor Corporation, Cleveland, Ohio
Continuation-in-part of application Ser. No. 711,339, Mar. 7, 1968. This application Nov. 24, 1969, Ser. No. 879,390
Int. Cl. F16h *47/04*
U.S. Cl. 74—687 **27 Claims**



Planetary gearing including a ring gear, a planet gear carrier, two sun gears and two corresponding sets of planet gears is combined with a hydraulic transmission means that is reversible in output direction without reversal of input direction and is reversible in direction of power flow. An engine is permanently connected to the hydraulic transmission means and is releasably connected to the ring gear. The hydraulic transmission means is releasably connectable to the ring gear and to the two sun gears individually.

3,626,788
AUTOMATIC POWER TRANSMISSION MECHANISM WITH COMPOUND PLANETARY GEARING
Stepas Smalinskas, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Jan. 13, 1970, Ser. No. 2,604
Int. Cl. F16h *57/10*
U.S. Cl. 74—765 **2 Claims**



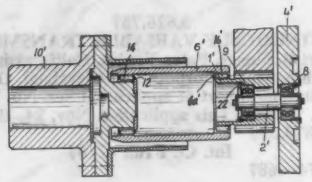
A multiple ratio power transmission mechanism having compound planetary gear elements, and clutches and brakes for controlling the relative motion of the gear elements to provide multiple, forward-driving speed ratios including an overdrive ratio wherein the numerical values for the ratios are evenly stepped and provide an increased ratio spread.

3,626,789

AXIAL SUPPORT FOR A PLANETARY GEARING

Hans W. Winter, and Karl Grimpe, both of Duisburg, Germany, assignors to Demag A.G., Duisburg, Germany

Filed Oct. 22, 1969, Ser. No. 868,309
Claims priority, application Germany, Nov. 25, 1968, P 18 10 772.7
Int. Cl. F16h *1/28*
U.S. Cl. 74—801 **1 Claim**



An axial support for a planetary gearing includes a planet gear carrier for rotatably supporting one or more planet gears for meshing engagement with a central sun gear. The sun gear is connected through a universal connection to a driving shaft. The sun gear is freely supported on a rod member which is affixed to the planet gear carrier but which permits axial displacement of the sun gear between a collar and a spacer member arranged around the rod adjacent the respective ends of the sun gear. A clutch sleeve, engaged between the drive shaft and the sun gear, permits universal movement of the shaft. In a further embodiment, the supporting rod for the sun gear is rotatably mounted within the planet gear carrier and rotatably supports the sun gear without any axial displacement. The rotatable bearings are pendulum-type bearings.

ERRATUM

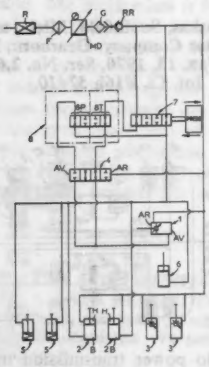
For Class 83—490 see:
Patent No. 3,626,783

3,626,790

PRESS FEEDING

Roger Jean Pinat, 9, rue des Capucines, 78 Poissy, France

Filed Aug. 4, 1969, Ser. No. 847,093
Claims priority, application France, Aug. 2, 1968, 161,641
Int. Cl. B65h *17/34*
U.S. Cl. 83—277 **1 Claim**



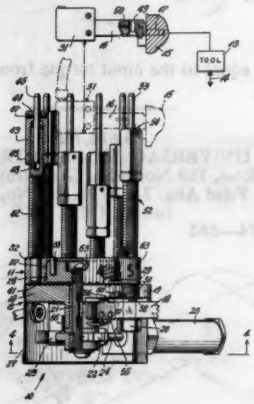
A two-position cycle selector operates a control valve to control operation of a press feed device in either of two opposite direction. Each of two fluid outlets of the control valve is opened and closed in response to movements of the press. One of the outlets is connected to each of two locking flanges which alternately lock the strip material fed to the press and is also connected to a stop valve. The other outlet is connected to the stop valve and operation of the selector selectively blocks the intake of fluid to the stop valve from each of the control outlets in accordance with the position of the stop valve.

3,626,791

INDEXABLE TURRET STOP ASSEMBLY

Paul D. Henderson, Avon, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed May 15, 1970, Ser. No. 37,740
Int. Cl. B23b *25/06*
U.S. Cl. 82—34 D **8 Claims**



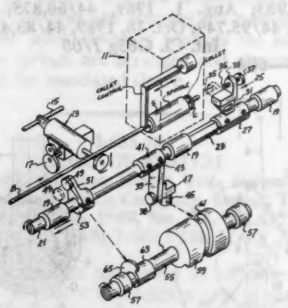
A turret stop assembly for use with a machine tool for controlling the extent of movement of a tool in which there is a plurality of adjustable stops and indexing means for positioning the stop desired to control the tool. The indexing means is permanently mounted on the tool while the adjustable stops are mounted on a turret which is only detachably secured to the indexing unit to enable easy replacement of one turret with preset adjustable stops for another with a different set of preset adjustable stops.

3,626,792

SWING STOP CONSTRUCTION FOR SCREW MACHINES

Josef Eichenhofer, 120 Oakdale Road, Brampton, Downsview 479, Ontario, Canada

Filed Apr. 13, 1970, Ser. No. 27,791
Int. Cl. B23b *13/12*
U.S. Cl. 82—34 A **3 Claims**



For a screw machine having a power spindle and collet and an automatic bar feeder for feeding bar stock through said collet and spindle, an improved swing stop rotatably mounted

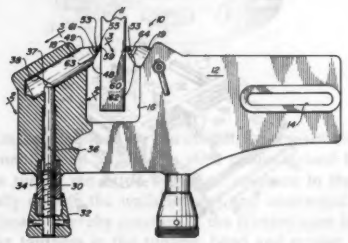
to rotate from a rest position to a stock stop position, and including a cam for automatically shifting the swing stop longitudinally forward a limited distance to permit the bar stock to be overfed past said normal stop machine position, and adapted for further returning the stock and bar stop to normal machining position.

3,626,793

BRAKE DISC SURFACER

Kenneth A. Rice, Waukegan, Ill., assignor to Ammco Tools, Inc., North Chicago, Ill.

Filed Sept. 2, 1969, Ser. No. 854,707
Int. Cl. B23b *29/26*
U.S. Cl. 82—36 **3 Claims**



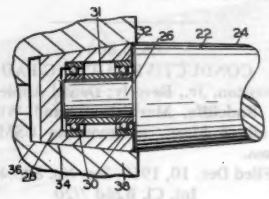
A brake disc surfacer includes a pair of tool support bar assemblies arranged on opposite sides of a rotatable brake disc so as to simultaneously remove metal from both faces of the disc. Thin, triangular cutting bits are respectively mounted on the end of each assembly so that 12 usable cutting edges are provided on each bit.

3,626,794

ARBOR WITH LIVE HEAD

Raymond J. Seethaler, 2044 N. Willis Blvd., Portland, Oreg.

Filed Mar. 24, 1969, Ser. No. 809,868
Int. Cl. B23b *25/00, 23/02*
U.S. Cl. 82—38 **8 Claims**



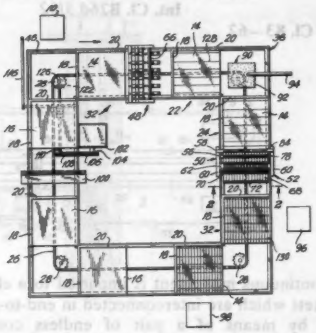
An arbor for use on lathes or the like having a body member with a tapered rear portion adapted to be mounted in the tailstock of a lathe. The body member at its forward end has a head arranged for rotatably connecting a chuck or the like with the arbor. The rotatable connection comprises a roller or ball bearing connection. In one embodiment of the invention the front end of the body member terminates in a spindle which supports a head by bearing means. The outer surface of the head is tapered for fitting into a tapered recess of a chuck. In association with this embodiment, an adapter head may be provided which has a tapered recess for receiving the tapered head of the arbor and which may have a selected outer diameter and configuration to fit various sizes of recesses which may exist in chucks. In another embodiment of the invention, the forward end of the arbor is tapered, and the head comprises a body portion fitted on the tapered end of the arbor and having bearings on its exterior which rotatably support the chuck.

3,626,795

GLASS-CUTTING APPARATUS AND METHOD

James C. White, Rutherford, N.J., assignor to Propper Manufacturing Company, Inc.

Filed Sept. 15, 1969, Ser. No. 857,981
Int. Cl. B26d *3/08*
U.S. Cl. 83—7 **10 Claims**



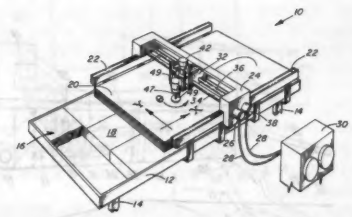
A glass-cutting apparatus for subdividing a rectangular sheet of glass into sections of predetermined rectangular configuration and size. A conveyor coacts with a plate which carries a sheet of glass to move the latter along a predetermined path. A pair of glass-cutting assemblies are situated along this path so that each of the assemblies will score an exposed surface of the glass sheet with a given number of straight parallel lines in preparation for subdividing the glass into the smaller sections. The conveyor and glass-supporting structure as well as the pair of glass-cutting units all coact with each other to provide between the glass and one of the glass-cutting units an orientation which is perpendicular to the orientation provided between the glass and the other of the glass-cutting units, so that the lines cut into the glass by one of the cutting units will be perpendicular to the lines cut into the glass by the other of the cutting units.

3,626,796

SHEET MATERIAL CUTTING APPARATUS WITH FAIL-SAFE MEANS

David R. Pearl, West Hartford, Conn., assignor to Gerber Garment Technology, East Hartford, Conn.

Filed Apr. 1, 1970, Ser. No. 24,717
Int. Cl. B26d *5/06*
U.S. Cl. 83—58 **5 Claims**



An apparatus for cutting sheet material includes a cutter mounted on an automatically controlled carriage for movement along a desired line of cut relative to an associated surface for supporting one or more layers of material to be cut. The cutter includes a reciprocating cantilevered cutting tool, and means are provided for immediately withdrawing the cutting tool from the material being cut in the event of a

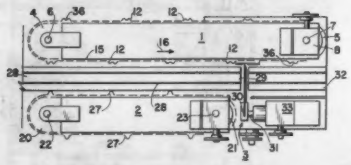
power failure to prevent it from cutting as it and the cutter coast uncontrolled to a stop.

3,626,797

SYNCHRONOUS CUTTER MECHANISM

Rodney K. Calvert, Dunwoody; Arthur B. Viescas, Decatur, and Alton J. Fishback, Austell, all of Ga., assignors to The Mead Corporation

Filed Mar. 9, 1970, Ser. No. 17,459
Int. Cl. B26d *5/22*
U.S. Cl. 83—62 **7 Claims**



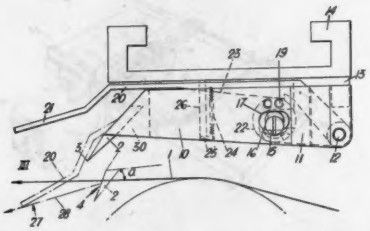
Continuous movement is imparted to a chain made up of packets which are interconnected in end-to-end spaced relation by means of a pair of endless conveyor elements disposed on opposite sides of the path of movement of the chain of packets, a plurality of spaced projections being provided on each conveyor and being disposed in the space between packets so that movement of the working reaches of the conveyors in the same direction imparts movement to the chain of packets. A continuously rotatable cutting element is mounted alongside the chain of packets and synchronized to swing through the space between adjacent packages and thereby to sever the packets one from another. The cutter element is mounted on a shaft which is parallel to the conveyors and to the path of movement of the chain of packets as viewed in a horizontal plane and which is disposed at an angle to the path of movement of the packets and to the conveyors as viewed in a vertical plane thereby to compensate for movement of the packets during cutting so as to effect a vertical cutting operation.

3,626,798

APPARATUS FOR SLITTING LENGTHWISE MOVING WEBS

Hew McInnes Grierson, Beaconsfield, England, assignor to Wiggins Teape Research & Development Limited, London, England

Filed Feb. 9, 1968, Ser. No. 704,307
Claims priority, application Great Britain, Feb. 15, 1967, 7,310/67
Int. Cl. B26d *5/02, 5/16*
U.S. Cl. 83—105 **13 Claims**



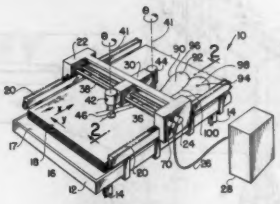
Apparatus for removing samples from a lengthwise moving web comprises at least one cutting element supported for movement towards and away from the web and actuating means which are operatively connected with support means for the cutter elements and which first effect entry of the cutting element into the web at a controlled rate and after insertion of the cutting element through the web effect transverse movements of the cutting element so that the web is slit between the longitudinal edges of the web.

3,626,799

APPARATUS FOR CUTTING AND NOTCHING SHEET MATERIAL

Heinz Joseph Gerber, and David R. Pearl, both of West Hartford, Conn., assignors to Gerber Garment Technology, East Hartford, Conn.

Filed Feb. 24, 1970, Ser. No. 13,506
Int. Cl. B26d *7/06, 11/00*
U.S. Cl. 83—132 **10 Claims**



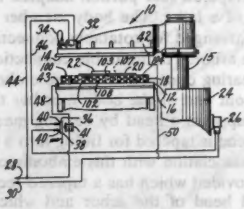
Apparatus for cutting and notching layups of sheet material includes a layup support means and a main carriage slidably mounted for movement in a first coordinate direction relative to such support means. First and second cutting heads are movably supported on the carriage for movement therewith in said first coordinate direction and for movement with respect thereto in at least one other coordinate direction. The carriage as well as the first and second cutting heads move in response to positioning signals supplied by a computerized controller. A first movable blade or cutting tool is driven by the first cutting head and is adapted to engage the layup to form a cut thereon as the cutting head is moved in a plane parallel to the layup. A second blade or cutting tool is driven from the second cutting head and is adapted to move in a plunging fashion relative to the layup to form a notch or cut therein.

3,626,800

CONDUCTIVE CUTTING PAD

Charles G. Newton, Jr., Beverly; Daniel Appleton, Topsfield; Milton R. Radcliffe, Marblehead, and William Tabroff, Peabody, all of Mass., assignors to USM Corporation, Boston, Mass.

Filed Dec. 10, 1969, Ser. No. 883,460
Int. Cl. B26d *7/20*
U.S. Cl. 83—658 **8 Claims**

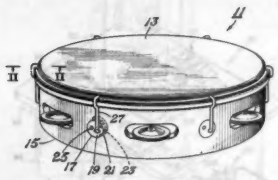


A conductive cutting pad of solid polyurethane cast about a soft metal, cellular structure so that cell walls of the structure extend between cutting surfaces on the pad.

3,626,801
TUNING OF PERCUSSION INSTRUMENTS

William T. Moore, 1805 Woods Drive, Arlington, Tex.

Filed Apr. 8, 1969, Ser. No. 848,653
Int. Cl. G10d *13/02*
U.S. Cl. 84—411 20 Claims

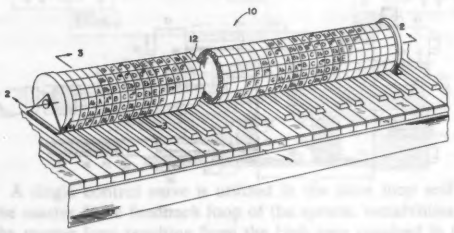


A tuning mechanism for percussion-type instruments having a tunable head adjacent a shell characterized by a friction-type tuning pin fitted within an aperture in the shell to frictionally engage the walls thereof and connected with the tunable head, whereby rotation of the friction-type tuning pin varies the tautness in the tunable head and retains the tautness by frictional engagement with sides of an aperture in the shell into which the pin is fitted. Percussion instruments employing the tuning mechanism and details of material and construction are also disclosed.

3,626,802
CHORD CONSTRUCTION GUIDE

Bernard Halpin, 97-40 62nd Drive, Rego Park, N.Y.

Filed July 14, 1970, Ser. No. 54,676
Int. Cl. G09b *15/00*
U.S. Cl. 84—478 6 Claims

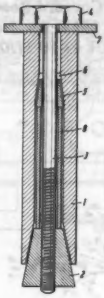


A chord construction guide, i.e., a training aid for use in teaching musical keys and their associated chords and for displaying and placing the same into close association with the keys on an instrument having standard keyboard spacing is disclosed including, a display means having a graphic presentation thereon of various musical keys, the notes associated with each key in predetermined spaced relation and indicating the combination of notes to form chords in each particular key illustrated, a container for containing the display means in such a manner as to permit viewing of the display means therethrough, and a support means for rotatably supporting the container in close proximity to the keyboard with which it is associated, so that the particular chords for any given key are available adjacent the fingertips of the user by mere rotation of the container to present selective portions of the display means to the person using the chord construction guide.

3,626,803
EXPANSION ANCHOR

Heinrich Liebig, Pfungstadt, Hessen, Germany

Filed Dec. 10, 1968, Ser. No. 782,553
Claims priority, application Germany, Dec. 16, 1967, P 16 25 394.4
Int. Cl. F16b *13/06*
U.S. Cl. 85—72 2 Claims

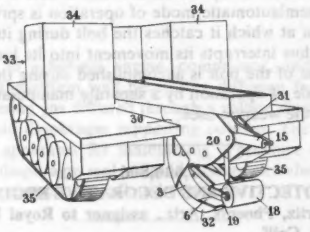


An expansion anchor has an expansion anchor sleeve having in the region of its leading end and inwardly spaced from the leading end two sections of a central passage which converge in the direction from the leading end towards the trailing end. Expander members are provided each of which cooperate with one of the converging sections and an actuating screw or the like is provided which extends through the central passage of the sleeve from the leading end towards the trailing end, engaging the expander members and drawing them in the direction towards the trailing end, thereby effecting radial expansion of the sleeve at two longitudinally spaced locations and in one and the same direction.

3,626,804
EQUIPMENT FOR LAYING MINES CONTINUOUSLY ON THE MOVE

Michel Paramythioti, Angers, France, assignor to French State, represented by the Minister of Armed Forces, Ministerial Delegation for Weapons, Technical Direction of Land Weapons, Technical Experiments Station of Angers, Paris, France

Filed Apr. 22, 1968, Ser. No. 725,259
Claims priority, application France, July 31, 1967, 116313
Int. Cl. F41f *7/00*
U.S. Cl. 89—1 A 7 Claims



The invention relates to equipment for mounting on a special vehicle to form therewith a mine-laying device for the continuous laying of mines at high speed during movement of the vehicle with optimum concealment. A mine-laying carriage is held stationary with respect to the ground by displacement on the vehicle at a speed equal and opposite to the speed of advance thereof, the carriage mounting a tool in the form of a curved casing constituting a means for introducing the mines into the ground, which is pivoted about a

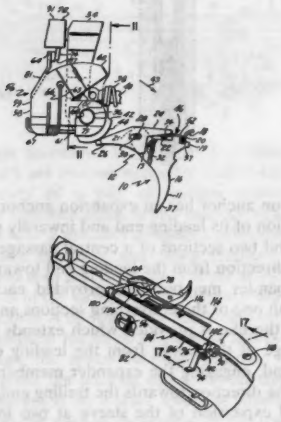
horizontal axis of the carriage, a pusher of the same curvature also pivoted about this axis, and means for effecting the working stroke and return of the tool and for maintaining each mine in its buried position on withdrawal of the tool.

3,626,805

MODIFICATION ASSEMBLY FOR CHANGING SEMIAUTOMATIC FIREARMS SELECTIVELY INTO FULLY AUTOMATIC FIREARMS

Lewis D. Shiplee, III, 818 Concord Road, Tallahassee, Fla.

Filed Oct. 16, 1969, Ser. No. 866,898
Int. Cl. F41d *11/02*
U.S. Cl. 89—128 **9 Claims**



A modification assembly for a semiautomatic firearm includes a sear disconnector, a hammer catch and a fire control selector that cooperate in enabling the weapon to be selectively fired in either a fully automatic or semiautomatic mode of operation. The sear disconnector prevents the sear piece from catching the hammer during counterrecoil of the bolt if the trigger piece is fully depressed and is carried by and movable with the trigger. The hammer catch is spring biased to a position at which it interrupts forward movement of the hammer during the fully automatic mode of operation and is so arranged in the modified firearm as to be actuated to release the hammer by the movement of the firing pin as the bolt closes during its counterrecoil. The fire control selector is manipulatable to permit the weapon user to select the desired mode of operation and has a bolt catch which during the semiautomatic mode of operation is spring biased to a position at which it catches the bolt during its counterrecoil and thus interrupts its movement into its locked position. Release of the bolt is accomplished during the semiautomatic mode of operation by a separate manipulation of the selector by the weapon user.

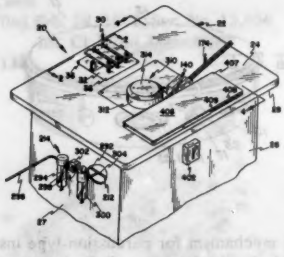
3,626,806

PROTECTIVE AND DECORATIVE EDGING

Alton L. Fritz, Phoenix, Ariz., assignor to Royal Industries, Pasadena, Calif.

Original application Mar. 3, 1969, Ser. No. 803,864, now Patent No. 3,513,521. Divided and this application Mar. 2, 1970, Ser. No. 18,801
Int. Cl. B23c *1/06*
U.S. Cl. 90—19 **2 Claims**

Method and apparatus for preparing a workpiece and affixing protective and decorative edging, preferably T-edging, to the peripheral edge of the workpiece, the apparatus providing (a) a slotting head for guiding the workpiece in a predetermined orientation and a moving slotting blade for cutting a groove in the peripheral edge of the workpiece; (b) a cutting tool for guiding the displacement of the T-edging, for maintaining the leading end portion of a T-edging in a proper orientation and for selectively, at the election of the operator, notching out a length of the tongue of the T-edging at a well defined position and/or completely severing the T-edging at a precise location; and (c) a hammer for forcing the tongue of the T-edging into the slot formed in the workpiece, the hammer operating only when displaced from the at



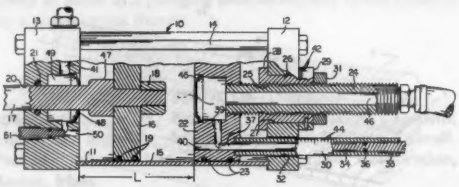
rest position by force applied to the workpiece. An indicator provides reference marks which, when aligned with a corner of the workpiece, indicates to an operator when to notch the tongue of the T-edging so that the notch will be properly located at the corner of the workpiece. Similarly, the location of the severed end of the T-edging can be predetermined to eliminate any gap between or overlap of the free ends of the T-edging disposed around the entire periphery of the workpiece.

3,626,807

ADJUSTABLE STROKE CYLINDERS

Kenneth B. Shartzer, 2416 Randolph Road, Janesville, Wis.

Filed Oct. 21, 1969, Ser. No. 870,497
Int. Cl. F15b *15/22*
U.S. Cl. 91—1 **8 Claims**



A simple and reliable hydraulic or pneumatic cylinder is provided with an axially adjustable internal head which permits highly accurate selective variation of the stroke of the cylinder piston. A piston-cushioning device is carried by the adjustable head and can be regulated independently of the stroke adjustment to control the cushioning of the piston at the end of its stroke.

3,626,808

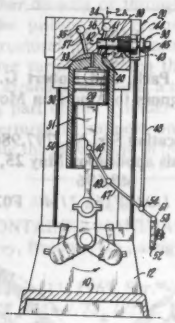
RECIPROCATING ENGINE

Norman EnHolm, P. O. Box 113, Briarcliff Manor, N.Y.

Filed Nov. 26, 1969, Ser. No. 880,287
Int. Cl. F01b *15/06;* **F01l** *31/14*
U.S. Cl. 91—176 **7 Claims**

A multicylinder reciprocating engine having pivotally mounted cylinders to permit oscillation of the cylinders during operation of the engine and improved valving means ac-

tuated by the motion of the piston to control the flow of steam or compressed gas through the inlet port and means



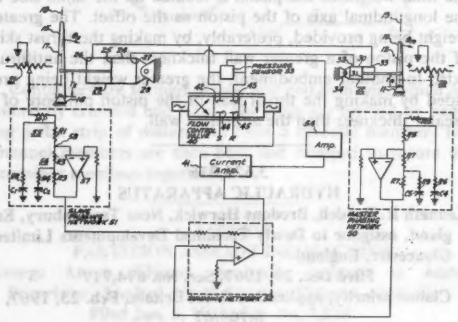
for adjusting the operation of the valving means to modify the power output of the engine.

3,626,809

BILATERAL SERVOSYSTEM

Donald L. Pieper, Schenectady, N.Y., assignor to General Electric Company

Filed Sept. 29, 1970, Ser. No. 76,562
Int. Cl. F15b *9/03, 9/09, 13/14*
U.S. Cl. 91—363 R **5 Claims**



A single control valve is utilized in the slave loop and in the master force feedback loop of the system. Instabilities in the master loop resulting from the high gain required in the slave loop and inherently existing therein in relation to the slave loop are eliminated by utilization of phase lag and phase lead networks in the master loop. Slew error in the system resulting from the use of such networks is minimized by the provision of phase lag and phase lead networks in the slave loop.

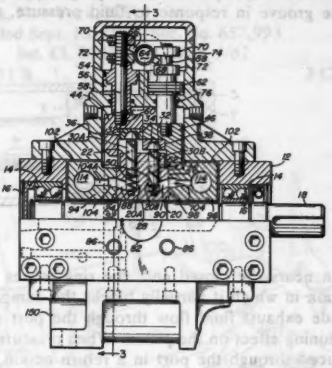
3,626,810

VARIABLE REVERSIBLE PISTON PUMP

Carl Morey, Cincinnati, Ohio, assignor to Silent Hydropower, Inc., Mariemont, Ohio

Filed Jan. 21, 1969, Ser. No. 792,360
Int. Cl. F04b *1/10, 49/08*
U.S. Cl. 91—486 **31 Claims**

The pump is of the variable displacement, reversible flow, positive displacement, radial piston type, characterized by a single rotatable part or rotor which carries a group of pistons; the pistons being reciprocated progressively by means of cam members or eccentric rings which, though adjustable, are always restrained against rotation; and the flow of fluid generated by the piston movements being controlled by one



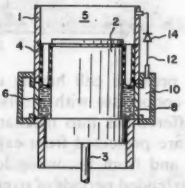
or more valve members or blocks fixed against rotation within the housing. The valve member or block has no moving parts, and controls flow of fluid through simple traveling ports in the rotor.

3,626,811

ROLLING DIAPHRAGM SEAL MEANS FOR REMOVING AND RECOVERING DIFFUSED GAS

Roelf Jan Meijer; Henricus Cornelis Johannes Beukering; Herman Fokker, and Albert August Dros, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Original application May 21, 1968, Ser. No. 732,492, now Patent No. 3,487,751, which is a continuation of application Ser. No. 514,293, Dec. 16, 1965, now abandoned. Divided and this application Oct. 16, 1969, Ser. No. 871,189
Int. Cl. F15b *21/04*
U.S. Cl. 92—79 **3 Claims**



For use in a hot-gas engine, compressor, and expansion machine, a partition wall permitting diffusion for removing and recovering gas diffused through a rolling diaphragm seal into a liquid diaphragm supporting column. The device includes an apparatus for maintaining a pressure differential across the diaphragm seal, a liquid storage chamber, and wire gauzes as a separator in a liquid container.

3,626,812

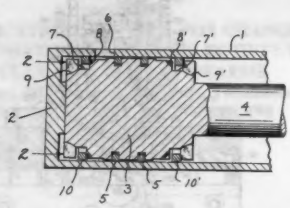
CYLINDER-CUSHIONING ARRANGEMENT

Robert E. Trick, Racine, Wis., assignor to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed July 9, 1970, Ser. No. 53,337
Int. Cl. F01b *11/02*
U.S. Cl. 92—85 **4 Claims**

The piston of a hydraulic cylinder is provided with a cushioning groove which is between the closed end of the cylinder and a fluid port when the piston nears the end of its

stroke. A relatively small damping passage in the piston communicates between one side of the groove and the fluid port, and a relatively large flow passage in the piston communicates between the opposite side of the groove and the closed end of the cylinder. A damping ring is axially movable in the groove in response to fluid pressure, and when the



piston nears the closed end, the ring moves to a damping position in which it partially blocks the damping passage to impede exhaust fluid flow through the port and provide a cushioning effect on the piston. When pressurized fluid is introduced through the port in a return action, however, the ring moves away from the damping passage to allow relatively unrestricted fluid flow.

3,626,813

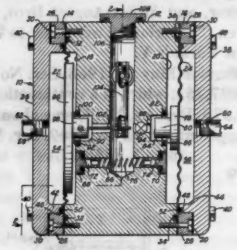
DIFFERENTIAL PRESSURE CELL

Kenneth G. Kreuter, Goshen, Ind., assignor to Robertshaw Controls Company, Richmond, Va.

Filed July 23, 1970, Ser. No. 57,656

Int. Cl. F01b *19/00*

U.S. Cl. 92—97 **16 Claims**



A differential pressure cell having a multiple-diaphragm structure which cooperates with a torsion assembly to convert pressure differentials into mechanical motion wherein the diaphragms are protected from exposure to high stress, from overtravel and from becoming locked in a high-limit position during extended periods of overpressure.

3,626,814

LOAD-MEASURING DEVICES

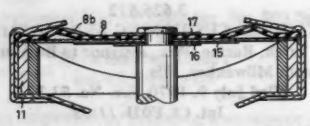
Erik Edvard Andersson, Alphyddevagen 35, 131 00 Nacka, Sweden

Filed Oct. 28, 1969, Ser. No. 871,838

Claims priority, application Sweden, Oct. 30, 1968, 14689/68

Int. Cl. G01l *5/12*

U.S. Cl. 92—98 R **5 Claims**



A force-unloading device having a pressure chamber with a flexible wall connected with a movement-unloading means and presenting an inlet for pressure medium. Adjacent the circumference of the inside of the chamber there is provided a guide surface with which the edge portion of the flexible wall engages when placed under load.

3,626,815

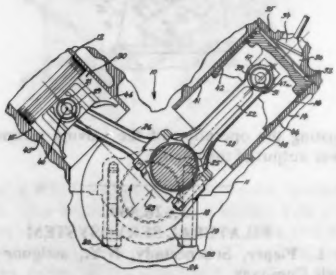
PISTON

Max Fingeroot, Oak Park, and Robert G. Minty, Warren, both of Mich., assignors to American Motors Corporation, Kenosha, Wis.

Continuation of application Ser. No. 797,986, Feb. 10, 1969, now abandoned. This application May 25, 1970, Ser. No. 48,696

Int. Cl. F16j *1/04*; **F16h** *21/40*; **F02b** *75/06*

U.S. Cl. 92—210 **7 Claims**



A piston constructed with a greater amount of its total weight located on one side of the longitudinal axis for the piston pin bore than on the other side. Where an offset piston pin mounting arrangement is utilized, the greater amount of the total weight of the piston is located on the same side of the longitudinal axis of the piston as the offset. The greater weight being provided, preferably, by making the thrust skirt of the piston of a greater wall thickness than the antithrust skirt. In another embodiment, the greater weight being provided by making the thrust wall of the piston pin bore of a greater thickness than the antithrust wall.

3,626,816

HYDRAULIC APPARATUS

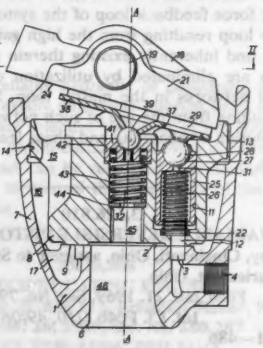
Kenneth R. Boydell, Bredons Harwick, Near Tewkesbury, England, assignor to Dowty Technical Developments Limited, Gloucester, England

Filed Dec. 29, 1967, Ser. No. 694,717

Claims priority, application Great Britain, Feb. 23, 1967, 8,709/67

Int. Cl. F01b *3/00*; **F04b** *1/02, 23/12*

U.S. Cl. 91—504 **10 Claims**



A swashplate pump or motor comprising a rotary cylinder block having cylinders either parallel to or inclined to the

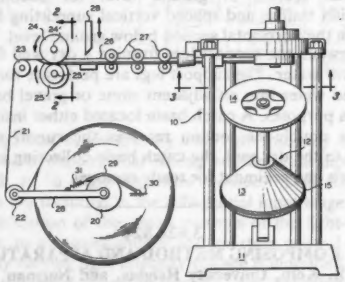
rotation axis, a valve on which the block is arranged to rotate, an inclined or inclinable swashplate located adjacent to one end of the cylinder block and engageable by pistons in the cylinders either directly or through the medium of slippers whereby the pistons are reciprocated as the block rotates and a structural member formed in one piece and having a flat valve surface forming the valve on which the cylinder block is arranged to rotate, a cylindrical bearing surface surrounding part of the cylinder block to locate it for rotation and apertures to support one or more transverse shafts which locate the swashplate in position.

3,626,817

CONTAINER MANUFACTURE

Howell T. McElvey, Decatur, Ga., assignor to Phillips Petroleum Company

Filed Apr. 11, 1969, Ser. No. 815,457
Int. Cl. B31b *1/72, 17/74;* **B23p** *19/04*
U.S. Cl. 93—36.5 R **3 Claims**



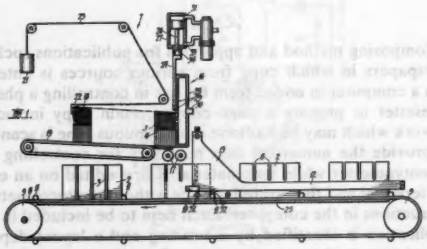
Containers are formed of side and end members which are joined by crimped end rings. The rings are formed by bending a flat strip of material to form a channel member. The channel members are then bent and crimped to secure the container members together.

3,626,818

PARTITION ASSEMBLING MACHINE

George Anson, Elwood, Australia, assignor to Andax Proprietary Limited, North Clayton, Victoria, Australia

Filed Jan. 8, 1970, Ser. No. 1,528
Claims priority, application Australia, Jan. 8, 1969, 48843/69
Int. Cl. B31b *1/00*
U.S. Cl. 93—37 R **9 Claims**



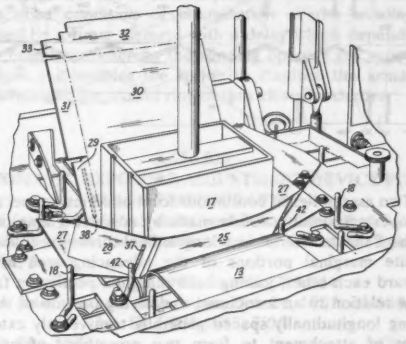
A machine for assembling intersecting panels movement of the cross panels to engage them with the longitudinal panels being effected by means of rotating rollers or other continuously moving surfaces.

3,626,819

DAUBER-TYPE ADHESIVE APPLICATOR FOR FOLDING BOX MACHINES

Sigurd J. Hoyrup, Monta Vista, Calif., assignor to Kliklok Corporation, New York, N.Y.

Filed Sept. 15, 1969, Ser. No. 857,993
Int. Cl. B31b *1/06, 1/48, 1/62*
U.S. Cl. 93—51 R **3 Claims**



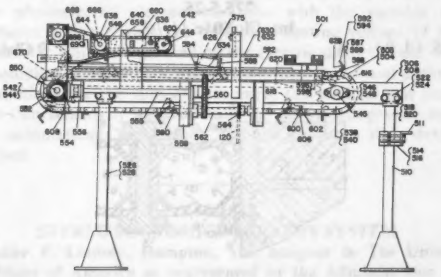
In the forming of a flat blank into the shape of a glued folding box by pressing the blank through a folding die by means of a plunger, spots of adhesive are daubed on the undersurface of the flat blank at the die mouth by an adhesive applicator which rises from a pool of adhesive. Simultaneously the top surface of the blank is acted upon by a counter element which backs up the blank and moves in a direction opposite to the applicator. The counter element may be mounted on a reciprocating carrier which also carries a suction cup for transporting the blank to the die.

3,626,820

APPARATUS FOR PRODUCING CARTONS

John W. Scully, Raynham, Mass., assignor to Pneumatic Scale Corporation, Quincy, Mass.

Filed Oct. 3, 1969, Ser. No. 863,436
Int. Cl. B31b *1/78, 5/74*
U.S. Cl. 93—53 BF **10 Claims**

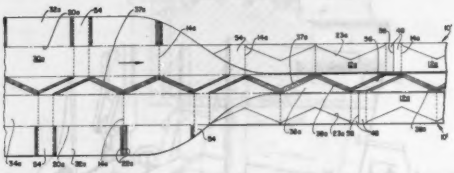


Apparatus comprising a side-seaming device adapted to fold a prescored carton blank along two scored lines and to provide an adhesively secured side seam to form a flat tube. The apparatus embodies a reverse-folding device arranged transversely to the discharge end of the side-seaming device and which is adapted to first square up the side-seamed carton and then refold the carton in the opposite direction on the two remaining scored lines. This results in a side-seamed carton which has been prebroken along all four vertical score lines.

3,626,821
METHOD FOR MAKING CONTINUOUS FORM ENVELOPES

Wilfred H. Gendron, Wilbraham, Mass., assignor to United States Envelope Company, Springfield, Mass.

Filed Nov. 10, 1969, Ser. No. 875,289
Int. Cl. B31b *23/00*
U.S. Cl. 93—63 M 12 Claims

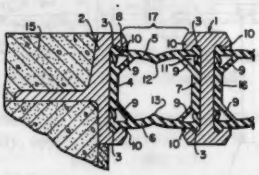


Two assemblies of continuous form or series-connected envelopes are simultaneously made by advancing an elongated web of sheet material in a longitudinal direction, folding opposite marginal portions of the advancing web inwardly toward each other, joining each marginal portion in face-to-face relation to an associated underlying portion of the web along longitudinally spaced generally transversely extending lines of attachment to form two assemblies of envelope bodies connected together by an exposed intermediate portion of the web, and cutting the advancing web along its intermediate portion to simultaneously form closing flaps for the envelopes comprising each of the assemblies and to separate the two assemblies from each other. In accordance with a further method of the invention the envelopes of each assembly are further separated into sets, each set including a plurality of envelopes joined together in end-to-end relation and having connecting strips at the opposite ends thereof. The sets are arranged with the connecting strips thereof longitudinally aligned and are joined together in series-connected relation by attaching a pair of spaced carrier strips to the connecting strips.

3,626,822
SEALING STRIP FOR EXPANSION GAPS, ESPECIALLY IN ROAD PAVEMENTS

Waldemar Koster, Forsbach, Germany, assignor to Firma Friedrich Maurer Sohne, Munich, Germany

Filed Oct. 1, 1969, Ser. No. 862,679
Claims priority, application Germany, Oct. 3, 1968, P 18 00 775.5-25
Int. Cl. E01c *11/10*
U.S. Cl. 94—18 9 Claims

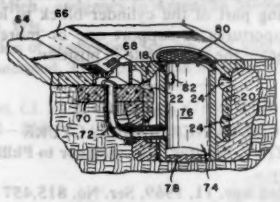


This invention relates to a sealing strip for expansion gaps, especially in road pavements, which strips are shaped with at least one horizontal wall connected to sidewalls with ridges cooperating with gripping means in said gaps to hold the strip in the gap. The horizontal wall is connected to the sidewalls by means of a connection triangle-shaped and positioned to keep substantially free from obstructions the space confined by said horizontal and sidewalls, whereby the strip may fold itself as it yields when the gap narrows, for example, due to pavement expansion.

3,626,823
COMBINATION STORM WATER RETENTION ASSEMBLY AND SIDEWALK

Andrew A. Toth, 3505 Springbrook Drive, South Bend, Ind.

Filed Feb. 2, 1970, Ser. No. 7,660
Int. Cl. E01c *11/24*
U.S. Cl. 94—31.1 8 Claims

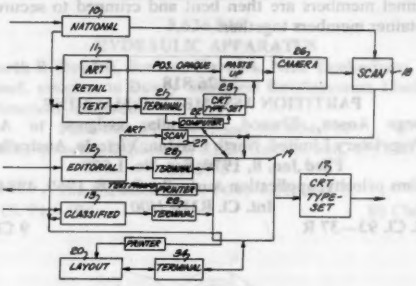


This invention includes a series of longitudinally aligned double-tee sections, each of which includes an upper horizontal section at ground level for accommodating pedestrian traffic, and spaced vertical supporting legs pending from the horizontal section below ground level. There is a void between the support legs forming a dry well for receiving runoff water. The support legs are perforate for releasing collected water into an adjacent stone or gravel bed for absorption purposes. A catch basin located either inside or outside the double-tee section receives the runoff water and feeds it to the dry well, the catch basin collecting and retaining debris and sediment for ready removal.

3,626,824
COMPOSING METHOD AND APPARATUS

Edwin R. Kolb, University Heights, and Norman Morrison, Beachwood, both of Ohio, assignors to Harris Intertype Corporation, Cleveland, Ohio

Filed Feb. 20, 1970, Ser. No. 13,069
Int. Cl. B41b *27/18*
U.S. Cl. 95—4.5 9 Claims



Composing method and apparatus for publications such as newspapers in which copy from various sources is entered into a computer in coded form for use in controlling a phototypesetter to prepare a page copy. Certain copy including artwork which may be halftone or continuous tone is scanned to provide the numerical data necessary for controlling the phototypesetter while text material is first edited on an editing terminal and then stored with or without phototypesetting instructions in the computer. Each item to be included in the publication is identified by a heading and a layout department instructs the computer as to where the items are to appear. For this purpose the layout department has a layout terminal for displaying page areas with previously assigned sections outlined and identified and for entering coordinates of newly assigned sections into the computer. The terminal can display magnified portions of the page area. In reproducing

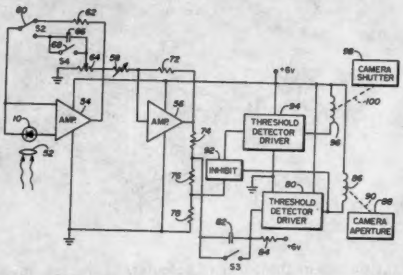
continuous-tone copy, dot characters are stored in a character memory and used to provide different halftone screen sizes.

3,626,825

RADIATION-SENSITIVE CAMERA SHUTTER AND APERTURE CONTROL SYSTEMS

Kenneth E. Years, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 28, 1970, Ser. No. 41,402
Int. Cl. G01j *1/00*
U.S. Cl. 95—10 C **8 Claims**



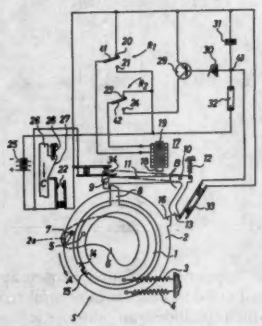
A voltage that varies linearly with light intensity variation is generated by an amplifier having a differential input stage connected to a light-responsive diode. Two high-gain transistors are included in the differential input stage to provide amplification of the signal currents of the light-responsive diode. In a camera shutter and aperture control system, the linearly varying light intensity voltage is amplified to control two threshold detector circuits. An inhibiting circuit prevents one of the threshold detector circuits from responding to the light intensity voltage until the first threshold circuit has completed its desired operation.

3,626,826

PHOTOGRAPHIC APPARATUS WITH ELECTRONIC EXPOSURE CONTROL MEANS

Johann Putscher, Munich, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 10, 1970, Ser. No. 71,184
Claims priority, application Germany, Sept. 13, 1969, P 19 46 533.9
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CT **18 Claims**



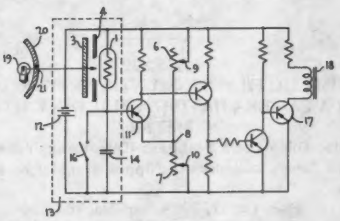
An electronic control for a shutter which respectively opens and closes on movement of a first and a second ring to uncocked position. The circuit of the exposure control has an electromagnet whose armature normally holds the rings in cocked positions and releases the first ring on actuation of the camera release. The second ring is released with a delay which is a function of scene brightness. The electromagnet has a permanent magnet core which is too weak to move the armature against the bias of a spring from a first retaining position in which both rings are held in cocked positions, and a winding which is energized in a first way on actuation of the camera release to assist the core in moving the armature to a second retaining position in which the armature holds only the second ring in cocked position whereby the shutter opens. The condition of energization of the winding is changed by a timer element with a delay which depends on scene brightness whereby the winding opposes the action of the core and enables the spring to displace the armature which releases the second ring to thus close the shutter.

3,626,827

AUTOMATIC EXPOSURE ADJUSTMENT DEVICE FOR FLASH PHOTOGRAPHY

Akio Yanagi; Shoichiro Kakuta, and Takeo Iida, all of Tokyo, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 25, 1968, Ser. No. 770,634
Claims priority, application Japan, Oct. 26, 1967, 42/68557
Int. Cl. G03b *9/62, 7/08*
U.S. Cl. 95—10 C **2 Claims**



An automatic exposure adjustment device for flash photography wherein part of the light rays of the flashbulb enter the photoelectric element and thus the flashlight intensity can be measured by the photoelectric element. The exposure adjustment factors, except the exposure time, are made to correspond with the light intensity control part, such as a filter or a stop, which controls the light intensity of the beam on the photoelectric element and also with the variable resistance which adjusts the switching starting voltage of the transistor which is operated by the electric delay circuit. The photoelectric element is the time constant factor and optimal conditions for the subject's distance, the camera lens stop, the film sensitivity and the flash for flash photography may be automatically established and the exposure time determined.

3,626,828

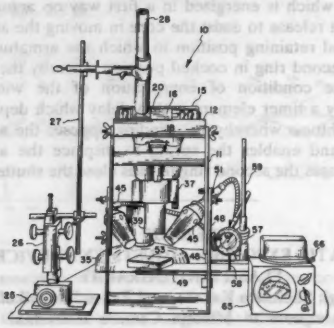
STEREO PHOTOMICROGRAPHY SYSTEM

Walter F. Lindsey, Hampton, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Mar. 27, 1969, Ser. No. 811,038
Int. Cl. G03b *35/08*
U.S. Cl. 95—18 **5 Claims**

A stereo photomicrography system having a stereo microscope capable of viewing a specimen at various magnifications. Support structure for holding a stereo camera which can be optically aligned with the stereo microscope. A focusing microscope with a very shallow depth of field positionable over the stereo camera and adjustable to focus on a reticle that can be placed at the film plane of the stereo

camera. A specimen holder which has height adjustment with respect to the stereo microscope and indicating mechanism associated therewith for producing readings of the height of the specimen. A photometer which can be utilized to measure the light intensity in the specimen image of the film



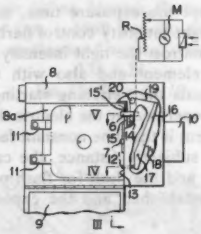
plane. The use of this equipment wherein the various heights of the specimen and the light intensities taken at various magnifications of the microscope can be utilized in conjunction with the film speed to obtain stereo microphotographs at various magnifications providing sharp and clear stereo photos.

3,626,829

AUTOMATIC FILM-SENSITIVITY SETTING DEVICE FOR A CAMERA HAVING A BUILT-IN EXPOSURE METER

Yozo Iida, Tokyo, and Yoshihisa Katsuyama, Yokohama-shi, both of Japan, assignors to Nippon Kogaku K. K., Tokyo, Japan

Filed Oct. 1, 1968, Ser. No. 764,256
Claims priority, application Japan, Oct. 13, 1967, 42/65592
Int. Cl. G03b *19/18*
U.S. Cl. 95—31 FS **5 Claims**



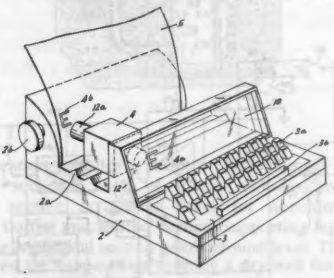
An automatic film-sensitivity setting means is provided for a camera having a built-in exposure meter and using a film cartridge. The film cartridge is formed with a positioning member which mates with a positioning member in the camera body, and is also formed with a film sensitivity determining member spaced from the cartridge positioning member in accordance with the sensitivity of the film loaded into the cartridge. A film-sensitivity sensing pin within the camera and interlocked with a variable resistance element in the exposure meter circuit is movable by the insertion of the cartridge into the camera body and then permitted to abut the sensitivity member of the cartridge to vary the resistance characteristics of the exposure meter circuit in accordance with the positioning of the sensing pin.

3,626,830

CHARACTER VIEWING AND REPRODUCING APPARATUS FOR A PHOTOCOMPOSING MACHINE

Dieter Sobottka, Middelsfahr, and Rolf Gruner, Jever, both of Germany, assignors to Olympia Werke Aktiengesellschaft, Wilhelmshaven, Germany

Filed June 20, 1969, Ser. No. 835,099
Claims priority, application Germany, June 22, 1968, P 17 61 675.0
Int. Cl. B41b *15/08*, *25/24*; H01j *31/50*
U.S. Cl. 95—4.5 **16 Claims**



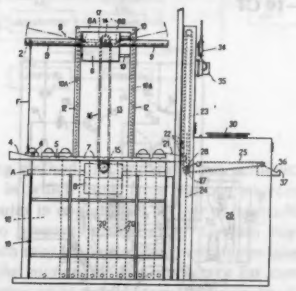
Light pulses in the form of selected character images are retained by a luminescent layer which is activated by the illuminated portion of a superimposed photoconductive layer onto which the character images are projected. Due to feedback from the luminescent layer to the photoconductive layer, the character image is retained for viewing as long as a voltage is applied to the superimposed layers. The character is also projected onto a record carrier which receives a light pulse only when a shutter is operated after the correctness of the selected character has been determined by viewing the character image, which is then erased.

3,626,831

APPARATUS FOR AUTOMATICALLY PROCESSING AND DRYING PHOTOGRAPHIC FILM AND PAPER

Arnold Reginald Kennington, Ealing, London, England, assignor to The Pavelle Corporation, New York, N.Y.

Filed Sept. 26, 1967, Ser. No. 670,670
Claims priority, application Great Britain, Sept. 28, 1966, 43,276/66
Int. Cl. G03d *3/08*
U.S. Cl. 95—89 **1 Claim**



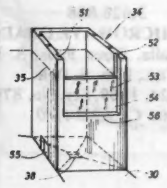
An automatic apparatus in which photographic films can be developed and dried in batches of several strips suspended from a rod which includes an automatic mechanism for sequentially lowering and raising each rod of films into and out of a series of baths. The film is moved into, held for a timed interval in, and moved out of each bath in the same vertical plane and moved horizontally to the next bath only while lifted completely out of the bath.

3,626,832

PHOTOGRAPHIC PROCESSING APPARATUS WITH LIQUID LEVEL CONTROL

Hans Kappeler; Josef Christen, both of Zurich, Switzerland, and Albert Petrus Wagemans, Edegem, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

Filed Mar. 17, 1969, Ser. No. 807,529
Claims priority, application Belgium, Sept. 25, 1968, 48,330
Int. Cl. G03d *3/02*
U.S. Cl. 95—89 R 2 Claims



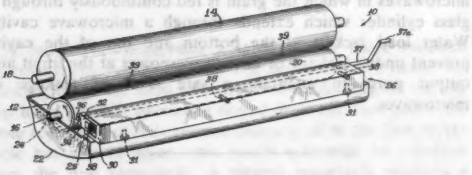
Photographic processing apparatus including an adjustable overflow conduit for varying the level of a bath of processing liquid and thus the effective processing time for the material, the conduit also including an outlet aperture adjacent the bottom of the liquid bath for discharging the liquid from the bath at a predetermined rate, the liquid from the overflow conduit emptying into a liquid reservoir from which the liquid is recirculated to the processing bath at a rate such that the amount of liquid discharged through the lower outlet opening makes up the bulk of the liquid being recirculated in order to create agitating currents along the bottom of the liquid bath.

3,626,833

LIQUID DEVELOPING APPARATUS

Robert M. Koch, Wheaton, Ill., assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Continuation-in-part of application Ser. No. 606,178, Dec. 30, 1966, now abandoned. This application June 9, 1969, Ser. No. 831,685
Int. Cl. G03d *5/06*
U.S. Cl. 95—89 R 10 Claims



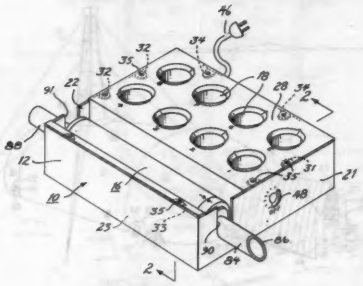
A roller-type developing apparatus with a wiping control for developing sensitized materials. The roller arrangement includes at least an applicator roller and a pressure-applying member in contacting engagement forming a developing zone. The wiping control is a rod coated with fluorocarbon plastic or a fluorocarbon coated blade that wipes controlled amounts of fluid from the applicator roll which has a surface finish smoothness expressed in terms of the average depth of the depressions or recesses formed therein, in microinches. An applicator roll having a smoothness of from 10–200 microinches centerline average smoothness (or roughness), together with the fluorocarbon plastic coated wiping control, applies less than 3.0 grams liquid per square meter of the copy sheet.

3,626,834

PHOTOGRAPHIC PRINT DEVELOPING UNIT

Sebastian Speranza, Philadelphia, Pa., assignor to James D. Weinstein, Philadelphia, Pa., a part interest

Filed Sept. 16, 1969, Ser. No. 859,614
Int. Cl. G03d *3/10*
U.S. Cl. 95—93 9 Claims



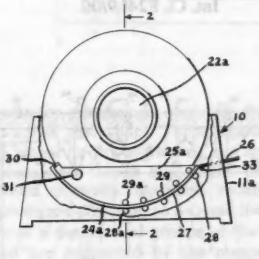
A photographic print developing unit comprising a housing including a cover and opposed walls for supporting a rotatable canister for developing photographic prints. The housing defines a compartment within which is placed a heater. The housing supports beakers containing the liquid chemistry to be used during the development process. The processing liquids are sequentially introduced into the canister while in a substantially vertical orientation and maintained out of contact with the print by a fluid guide element until the canister is placed in a horizontal orientation. The canister and the beakers are preheated and thereafter maintained at a uniform temperature during the development process.

3,626,835

PHOTOGRAPHIC PROCESSING MACHINE

Werner W. Buechner, 4407 Gladding Court, Midland, Mich.

Continuation-in-part of application Ser. No. 402,545, Oct. 8, 1964, now Patent No. 3,411,424, which is a division of application Ser. No. 342,459, Feb. 4, 1964, now Patent No. 3,349,686, which is a continuation-in-part of application Ser. No. 23,313, Apr. 19, 1960, now Patent No. 3,124,051, Continuation-in-part of application Ser. No. 677,265, Oct. 23, 1967, now abandoned. This application July 19, 1968, Ser. No. 746,210
Int. Cl. G03d *3/08*
U.S. Cl. 95—93 13 Claims



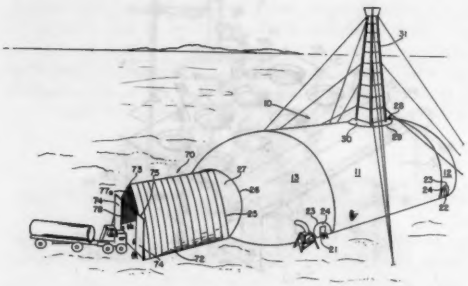
A photographic processing machine for the treatment or development of stationary, limp flexible photographic materials, face down on a rotating textured horizontal drum. The lower portion of the drum is contained in a curved bottom troughlike receptacle which receives the treating liquids. A mechanism is provided for quick dumping of the spent treating liquids from said receptacle.

3,626,836

DRILLING OPERATION SHELTER

Joh G. Schneidler, Seattle, Wash., assignor to Schneidler Industries, Inc., Seattle, Wash.

Filed Dec. 4, 1969, Ser. No. 881,979
Int. Cl. F24f *13/00*
U.S. Cl. 98—33 **16 Claims**



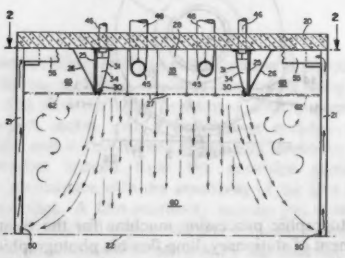
An enclosed system providing a shelter large enough to permit unhampered oil well drilling operations under adverse weather and wind conditions includes an air inflated enclosure large enough to surround a drilling site and drilling rig of a drilling operation, the upper part of the mast of the drilling rig extending through the roof of the air-inflated enclosure without any load from the enclosure being exerted on it. Entry into the air-inflated enclosure is through a prefabricated double-door air lock. A venting system provides continuous exhaust of gases from the drilling area. A quick release emergency venting system is provided to exhaust large volumes of gas adjacent the wellhead in the event of a major gas blowout. The air supported enclosure can be erected in a minimum amount of time using the mast of the drilling rig to assist in the erection. The air-inflated enclosure is made up of sections of flexible, gastight, water-impervious material which are laced together so they can quickly be assembled and disassembled.

3,626,837

DUAL PLENUM FOR VENTILATING CEILINGS IN CLEAN ROOMS

Michael H. Pelosi, Jr., Broomall; Frank J. Calderbank, Philadelphia, both of Pa., and James T. Wilson, Willingboro, N.J., assignors to CHS Industries Inc., Conshohocken, Pa.

Filed Feb. 13, 1970, Ser. No. 11,053
Int. Cl. F24f *9/00*
U.S. Cl. 98—36 **9 Claims**



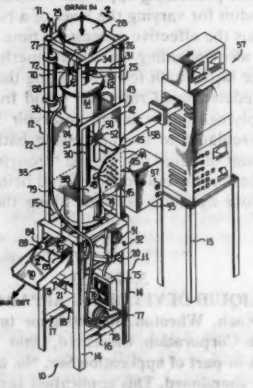
A bounded clean air space within a room is provided by a dual plenum located directly above the clean air space, the plenum formed of the pre-existing room ceiling, a lower plenum ceiling and plenum walls, and divided into two chambers by a membrane, the inner chamber being a supply chamber for providing clean air to the clean air space, and the outer chamber providing a supply source for air delivered through a slot extending around the periphery of said lower plenum ceiling. An air curtain which laterally bounds the clean air space is formed by the air supplied through the slot, which air is removed through peripheral air openings at the bottom of the room.

3,626,838

CONTINUOUS MICROWAVE GRAIN COOKER

Homi D. Gorakhpurwalla, Sioux Falls, S. Dak., assignor to DorRan Electronics Inc., Ellis, S. Dak.

Filed Nov. 24, 1969, Ser. No. 879,420
Int. Cl. A23l *1/10*
U.S. Cl. 99—237 R **3 Claims**



Apparatus for continuously cooking grain by means of microwaves in which the grain is fed continuously through a glass cylinder which extends through a microwave cavity. Water load jackets at the bottom and top of the cavity prevent undue leakage of microwave power at the input and output ports to maintain a safe level of leakage of microwaves.

3,626,839

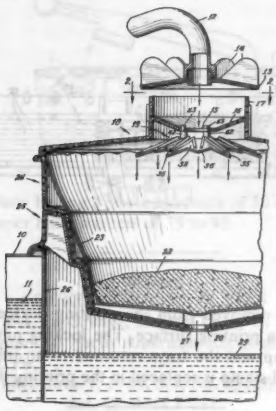
HOT WATER SPRAY HEAD FOR COFFEE MAKING MACHINE

John C. Martin, and Eugene G. Rescho, both of Springfield, Ill., assignors to Bunn-O-Matic Corporation, Springfield, Ill.

Continuation-in-part of application Ser. No. 3,013, Jan. 15, 1970, now Patent No. 3,593,650, dated July 20, 1971. This application July 29, 1970, Ser. No. 59,296
Int. Cl. A47j *31/00*
U.S. Cl. 99—315 **7 Claims**

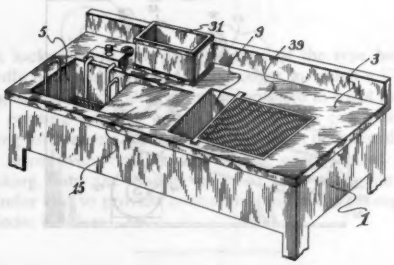
Hot water is distributed over ground coffee to make coffee extract by a frustoconical one piece plastic spray head having a serrated periphery with alternate serrations of different lengths. Channels formed by inverted V-shaped integral ribs direct the flow of the hot water to the tips of the serrations.

Upstanding support pins from the flat upper surface are aligned with certain of the channels which are wider at the



entrance than the other channels to compensate for the presences of the support pins.

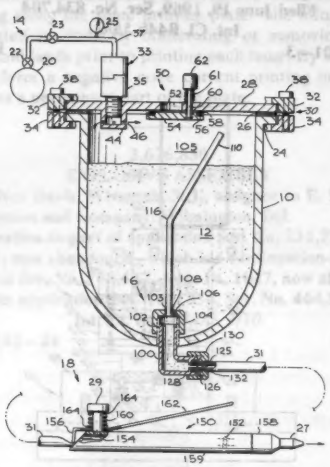
3,626,840
FOOD FRYER
William T. Day, 7315 East 24th St., Tulsa, Okla.
Filed May 14, 1970, Ser. No. 37,128
Int. Cl. A47j 37/12
U.S. Cl. 99—355 **3 Claims**



A food fryer comprises a table having three recessed receptacles in the top thereof. The first contains a heater for cooking oil to fry food submerged in or floating on the oil, and has a laterally extending sloped drain recessed below the table top, that not only returns draining oil to the first receptacle but also receives what would otherwise be overflow from the first receptacle. A second receptacle receives a removable draining receptacle for cooking racks; while the third receptacle may for example comprise a reservoir for glazing or other liquids and has a sloped drainboard beneath a draining rack.

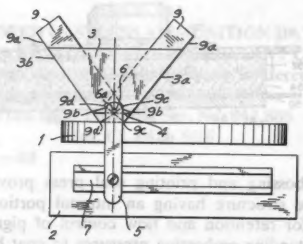
3,626,841
ABRASIVE PROPELLENT APPARATUS
Zvi Harry Schachter, 16247 Dickens St., Encino, Calif.
Filed July 3, 1969, Ser. No. 838,741
Int. Cl. B24C 3/06
U.S. Cl. 51—8 **5 Claims**

An apparatus for dispensing at sonic velocity a jet stream of a dispersion of flowable material in a gas. The apparatus includes a container for storing a body of flowable material and a mixing chamber associated with the bottom of the container. The mixing chamber contains an orifice communicating the chamber with the body of material. A tubing connects the chamber with the pressurized head space above the



material. The pressure drop through the tubing provides a pressure differential metering material through the orifice into the chamber.

3,626,842
APPARATUS FOR GRINDING THE CORNERS OF FLAT GLASS PLATES SUCH AS GLASS SLIDES
Gerhard Menzel, Braunschweig, Germany, assignor to Propper Manufacturing Company Inc., Long Island City, N.Y.
Filed Nov. 28, 1969, Ser. No. 880,586
Int. Cl. B24b 9/08
U.S. Cl. 51—125 **4 Claims**



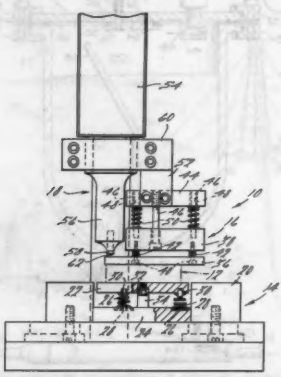
An apparatus for grinding or rounding the corners of flat glass plates such as glass slides. The apparatus includes a rotary grinding wheel having a grinding surface over which an elongated, bottomless trough is located. This trough has a pair of opposed sidewalls oppositely inclined toward each other in a downward direction to provide the trough with the cross section of a funnel, and groups of the slides which are to be treated are supported by the opposed walls of the trough in the latter with lower end regions of the slides extending through the open bottom of the trough into engagement with the grinding surface of the grinding wheel. A positioning rod extends parallel to the opposed walls of the trough along the center line of the open bottom thereof to engage and support the slides at their lower edges while their corners are rounded by engagement with the grinding surface of the grinding wheel.

3,626,843

ULTRASONIC MARKING

Richard G. Willing, Ann Arbor, Mich., assignor to Federal-Mogul Corporation, Detroit, Mich.

Filed June 19, 1969, Ser. No. 834,704
Int. Cl. B44b 5/00
U.S. Cl. 101—3 11 Claims



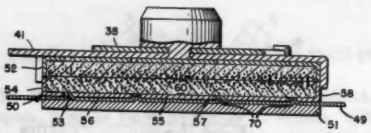
Apparatus for marking identifying numbers and/or other indicia on parts by use of an ultrasonic transducer for driving stamp means generally against a part whereby the part will be marked with the desired numbers and/or indicia.

3,626,844

PRINT-EMBOSSING SEAL PRESS

Charles Priesmeyer, Park Ridge, Ill., assignor to Consolidate Foods Corporation

Original application Mar. 31, 1961, Ser. No. 99,871, now Patent No. 3,522,769. Divided and this application July 14, 1969, Ser. No. 870,968
Int. Cl. B44b 5/02
U.S. Cl. 101—3 SP 7 Claims



An embossing and printing seal press provided with a female die structure having an internal portion of porous material for retention and flow control of pigmented fluid and withstanding embossing pressures to coat by capillarity and contact the crown portion of characters embossed in paper.

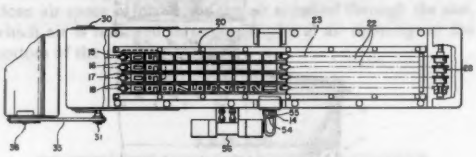
3,626,845

AUTOMATICALLY LOADED HAND STAMP

Glenn Edward Whitaker, Montesano, Wash., assignor to Lamb-Grays Harbor Co., Inc., Hoquiam, Wash.

Filed Feb. 10, 1969, Ser. No. 797,817
Int. Cl. B41j 7/32
U.S. Cl. 101—93 9 Claims

A hand-held printing stamp is automatically loaded with printing blocks representative of alpha, numeric or symbolic data, such as, the weight of an object as measured by a weigh scale. The stamp is part of a printing device having a plurality of printing blocks contained in one or more trays. The data output device, such as, a scale is coupled to the printing device and commands a motor to drive the trays past the stamp. The controls cause the trays to stop independent of one another when printing blocks designated by the output device or scale are beneath the stamp. The designated printing blocks are locked to the stamp by a locking pin. The



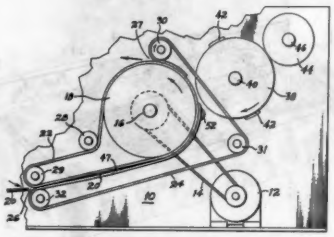
stamp is then removed from the printing device, inked and used to mark a printing surface. The locking pin is removed from the stamp and the trays returned to an initial position when the hand stamp is replaced in the printing device.

3,626,846

APPARATUS FOR PRINTING INDICIA ON A SERIES OF DOCUMENTS

Albert C. Wiegert, and Casimir Nawrocki, both of 901 Elmgrove Road, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 26, 1969, Ser. No. 861,327
Int. Cl. B41f 13/20, 13/26
U.S. Cl. 101—233 6 Claims



Apparatus is disclosed for disposing indicia on a plurality of documents as they are moved through the apparatus. The apparatus includes a feed path along which the plurality of documents are moved one at a time, a printing member for placing indicia on the documents as they are fed along the feed path, and a backup member movable from a first, retracted position in response to the passage of a document to a second engaging position in which the backup member serves to support the document as suitable indicia are placed thereon by the printing member.

3,626,847

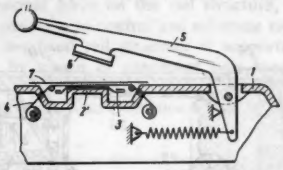
ADDRESS PRINTING MACHINES USING YIELDABLE PRESSURE PADS AND THIN FOIL ADDRESS PLATES

Heinz Dieter Janzen, Berlin, Germany, assignor to Adrema-Werke GmbH, Berlin, Germany

Filed Feb. 17, 1969, Ser. No. 799,646
Claims priority, application Germany, Mar. 1, 1968, P 16 36 307.8
Int. Cl. B41j 11/12; B41l 47/44; B41j 1/38
U.S. Cl. 101—407 5 Claims

A pad or cushion for addressing machines comprises two

layers, the layer arranged to come closest to the embossed addressing plate having a Shore hardness of 30 to 50 while an underlying layer has a harness of 75 to 95.



3,626,848

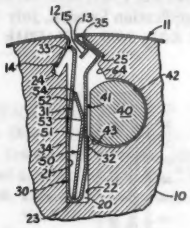
LOCKUP FOR THIN PLATES

Leonard I. Tafel, La Grange, Ill., and Larry G. Taylor, Plano, Tex., assignors to North American Rockwell Corporation, Pittsburgh, Pa.

Filed June 9, 1969, Ser. No. 831,394

Int. Cl. B41f *27/12*

U.S. Cl. 101—415.1 **8 Claims**



A lockup for a thin printing plate of the type having inwardly bent leading and trailing edges in which a U-shaped longitudinally extending spring is mounted in a slot formed in the printing cylinder with a cam shaft on one side of the spring for pressing the legs of the spring in the same direction for respectively holding the leading edge captive and for hooking onto the trailing edge to lock the plate to the cylinder and to provide continuous automatic takeup as the cylinder revolves.

3,626,849

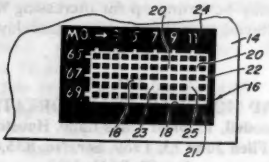
METHOD OF PREPARING A PRINTING PLATE WITH A SUBTRACTIVE INDICIA SYSTEM

Dwight V. Sinninger, Oak Park, Ill., assignor to Senn Custom, Inc., Oak Park, Ill.

Continuation of application Ser. No. 659,494, Aug. 9, 1967, now abandoned. This application Dec. 11, 1969, Ser. No. 884,318

Int. Cl. B41m *5/00*; B41n *3/00*

U.S. Cl. 101—463 **1 Claim**



An improved subtractive indicia system utilizing the initial provision of a grid or excess indicia and a subtractive system of accumulating information by selective removal of certain indicia. Lands occupying coded positions are applied to an offset printing plate as an improved system for accumulating information in the publishing of successive issues of a bulletin or catalog using the same printing plate. The information is accumulated in code by obliterating or removing one or more of said lands prior to printing each issue. By subtracting lands to form a negative code current printing information constitutes a permanent part of the plate.

3,626,850

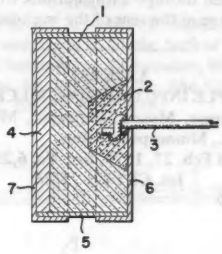
EXPLOSIVE ASSEMBLY

Clyde Oliver Davis, Wenonah, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 231,773, June 15, 1951, now abandoned , which is a continuation-in-part of application Ser. No. 768,547, Aug. 14, 1947, now abandoned. This application Oct. 26, 1954, Ser. No. 464,802

Int. Cl. F42b *3/00*, *3/10*

U.S. Cl. 102—24 **10 Claims**



The invention is an explosive assembly having a flat metal plate in contact with a flat surface on a high-density charge of high explosive.

3,626,851

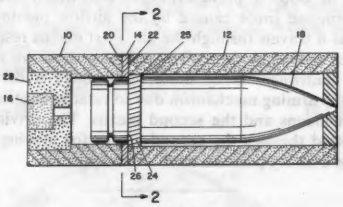
TELESCOPED CASELESS AMMUNITION HAVING A GAS BARRIER WITHIN THE PROPELLANT CHARGE

John A. Ruth, Westerloo, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Sept. 29, 1969, Ser. No. 861,886

Int. Cl. F42b *5/18*

U.S. Cl. 102—40 **11 Claims**



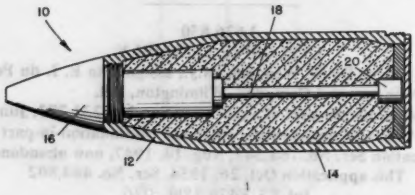
A propellant charge for a telescoped round of caseless ammunition is provided with a gas barrier which separates the propellant charge into a forward-end and an aft-end. The gas barrier temporarily delays ignition of the forward-end of the propellent charge resulting in improved ballistic performance for the caseless round.

3,626,852

WARHEAD INITIATION TRANSFER LINK

Richard A. Plauson, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 16, 1968, Ser. No. 753,215
Int. Cl. F42c *1/02, 1/04, 1/13*
U.S. Cl. 102—73 8 Claims



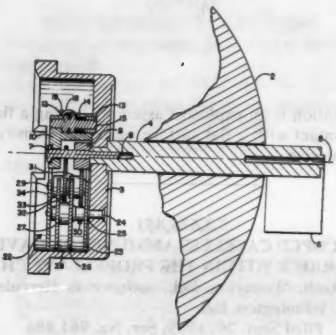
A nose-fused warhead is provided with means for initiated detonation of the explosive charge from the rear. A detonating shock is passed through a transfer link from the nose-fuse to a booster charge at the rear of the warhead.

3,626,853

MULTIPLE INPUT ARMING MECHANISM

Arnum E. Kraemer, Mound, Hennepin, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 27, 1970, Ser. No. 6,255
Int. Cl. F42c *15/26*
U.S. Cl. 102—79 7 Claims



An arming mechanism for a spinning projectile, whereby said mechanism is responsive only to the simultaneous existence of both a predetermined centrifugal force and a predetermined force caused by the airflow passing the projectile as it travels through the air. First means responding to the force caused by the airflow and second means responding to the centrifugal force unite to produce a driving force within the arming mechanism due to relative motion between the first means and the second means. The driving force is transmitted through the second means for moving a detonator from a safety position to an armed position.

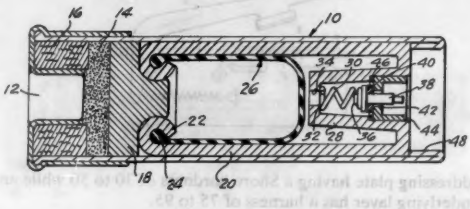
3,626,854

SELF-INFLATING TARGET PROJECTILE

Jerry R. Brooks, 1716 Merrywood Way, Gainesville, Tex.

Filed Sept. 19, 1969, Ser. No. 859,405
Int. Cl. F42b *5/22, 9/20*
U.S. Cl. 102—41 4 Claims

A self-inflating target projectile comprising a tubular member with a gunpowder charge therein and adapted to be disposed in the barrel of a gun, with a hollow capsule in said tubular member having an inflatable balloon therein and a check valve adjacent one end of the capsule with a plug adjacent the other end thereof, said capsule being adapted to



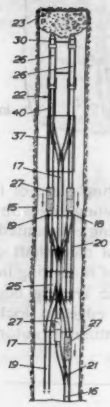
be ejected by the gunpowder and said check valve enabling the interior of the capsule to be charged with a gas for inflating the balloon therein.

3,626,855

METHOD AND TRACK SECTION FOR LAYING TRACK IN TUNNEL DRIVING

Gosta Fogelstrom, Nacka, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed June 20, 1969, Ser. No. 835,165
Claims priority, application Sweden, July 1, 1968, 9070/68
Int. Cl. E01g *3/00, 3/06;* E01b *29/00*
U.S. Cl. 104—3 4 Claims



A track section for laying a trackway during tunnel boring to provide support for equipment to be advanced as the tunnel progresses, which is longitudinally and slidably supported at the forward and rear end subsections thereof, respectively, on the tunnel floor in front of the tunnel haulage tracks and on said tracks. The track section is advanced slidably as a whole by application of hydraulic power jacks between the forward end section and the tunnel haulage tracks. Upon advancement, the tunnel haulage tracks are extended by laying additional tracks on the tunnel floor underlying the intermediate subsection. The track portions of the intermediate subsection may be swung up for increasing the accessibility to the underlaying tunnel floor during tracklaying.

3,626,856

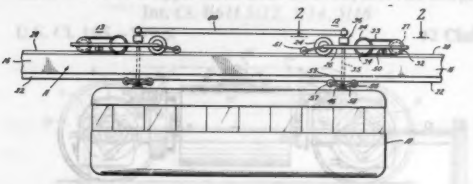
OVERHEAD MONORAIL TRANSPORTATION SYSTEM

Murel G. Goodell, 15 Briar Oaks Lane, Houston, Tex.

Filed June 23, 1969, Ser. No. 835,421
Int. Cl. B61b *3/02*
U.S. Cl. 104—89 1 Claim

A monorail coach is suspended from a lightweight overhead rail structure by a coupling mechanism which provides

a laterally rigid coupling between the coach and the rail structure. This converts any lateral sway movement of the coach into a torsional force on the rail structure, thereby enabling the rail structure to control and minimize such sway movement. The overhead rail structure is supported from tower structures by means of cantilever type tower arms which are constructed to have a load deflection which is substantially the same as the load deflection of the rail structure



intermediate the tower structures. This enables the coach to ride at a substantially constant elevation during its passage along the rail system. The rail structure is further constructed to have a weight per linear foot such that the kinetic energy of the coach at a relatively low coach velocity exceeds the energy required to straighten a laterally deflected span of the rail structure. This enables operation of coaches at higher operating speed without producing undesirable vibration effects.

3,626,857

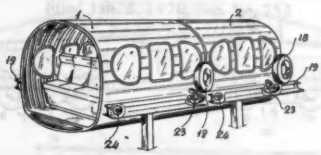
ARTICULATED TRAIN

Alejandro Goicoechea Omar, Madrid, Spain, assignor to Sociedad Anonima De Trenes Verte Brados, Madrid, Spain

Continuation-in-part of application Ser. No. 719,900, Apr. 9, 1968, now abandoned. This application Aug. 30, 1968, Ser. No. 756,561

Int. Cl. B61b *3/02, 13/04, 17/20*

U.S. Cl. 104—119 **20 Claims**



A plurality of small, individual car units are provided, each measuring about 2–3 meters (7–10 feet) in length and 2–3 meters (7–10 feet) in width. A single drive wheel is mounted at each side of the car unit, so that the unit will be suspended between a pair of rails, the center of gravity being at, or below the suspension or surface. Adjacent car units are interconnected by weight-bearing couplings which keep adjacent car units from tipping about the single support wheels. These interconnections may be pins, interfitting truncated cones, spherical sections or the like, permitting relative movement of the car units.

3,626,858

LINEAR INDUCTION MOTOR STATOR ASSEMBLY

Norman Whitfield Colling, and George Philip Quayle, both of Fulwood, England, assignors to Tracked Hovercraft Limited, London, England

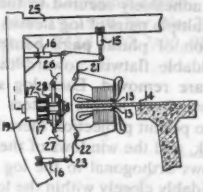
Filed July 10, 1969, Ser. No. 840,695

Claims priority, application Great Britain, July 11, 1968, 33,182/68

Int. Cl. B61b *13/00*

U.S. Cl. 104—148 **19 Claims**

To control the thrust and hence the acceleration produced by a linear induction motor, an actuator is provided to vary the gap between the stator and the cooperating linear induction motor reaction rail. A tracked air cushion vehicle is shown propelled by a double sided linear motor. In one arrangement the stator has two parts which are disposed one on either side of the reaction rail, the stator parts are pivoted



and a hydraulic actuator can pivot them apart. In another arrangement where the stator has two parts, the stator parts remain parallel to each other as the actuator moves them apart.

3,626,859

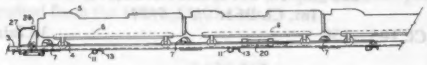
IDLE CAR STORAGE AND DISPENSING SYSTEM

Bernard Bradbury, and Bruce D. Norlie, both of Chico, Calif., assignors to Rex Chainbelt Inc., Milwaukee, Wis.

Filed Dec. 19, 1969, Ser. No. 886,521

Int. Cl. B61k *7/18*

U.S. Cl. 104—252 **8 Claims**



Idle cars of a baggage handling system suitable for use in busy airports are stored on sidings in a storage area. Each siding has a retractable stop arranged to arrest the leading car on the siding and a plurality of powered drive wheels on a reciprocable frame, the drive wheels cooperating with a member on the car to drive the car. The member is of lesser length than the overall length of the car and the drive wheels are spaced at intervals equal to the overall length of a car such that the drive wheels are out of engagement with the members when the car or cars are arrested by the stop. To release a car from storage the stop is withdrawn and the frame shifted to engage the drive wheels with the car members. The first drive wheel provides a higher speed than the others to open a gap between the first and the following cars such that the stop may be returned to arresting position prior to arrival of the next car at that position.

3,626,860

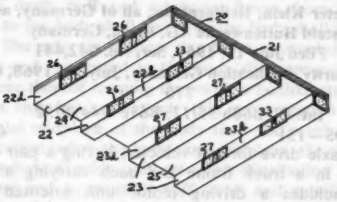
FOLDABLE EXPENDABLE FOUR-WAY ENTRY PALLET

David H. Blatt, Melrose Park, Pa., assignor to Walnut Industries Company, Philadelphia, Pa.

Filed June 1, 1970, Ser. No. 41,809

Int. Cl. B65d *19/18*

U.S. Cl. 108—58 **16 Claims**



A foldable expendable four-way entry pallet, merchandise container or other article carrier constructed of corrugated

paperboard including a planar deck and foldable, reinforcing log pockets or sleeves secured to the underside of the deck. Log sleeves are formed in pairs at opposite ends of a piece of double-faced single-wall corrugated board and the entire intervening web is adhesively secured to the underside of the deck. Single or multiple pairs of log sleeves may be used with the log orientation of plural pairs being parallel and the sleeves being foldable flatwise toward the deck when the reinforcing logs are removed. Each log sleeve is provided with a pair of windows having centers spaced apart the proper distance to permit projection therethrough of the fork of a fork lift truck, and the windows of the paralleled sleeves are aligned in rows orthogonal to the log sleeves. The reinforcing logs fit slidably closely within the log sleeves and may be of expanded polystyrene or any other suitable rigid frangible material. The portions of the logs exposed through the windows of the sleeves are notched or otherwise formed to break out cleanly when impacted by the fork of a fork lift truck to permit the fork to pass through the windows, and are also top-notched to provide for passage of banding straps.

3,626,861

METHOD OF OPERATION OF A PLURALITY OF POWER TRANSMISSIONS

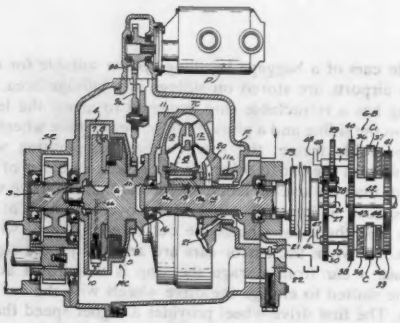
James B. Black, Kinnickinnic Road, Roscoe, Ill., and Samuel Luzaich, 1411 Forest View Drive, Santa Rosa, Calif.

Division of Ser. No. 745,209, July 16, 1968, Pat. No. 3,561,367, which in turn is a division of Ser. No. 615,983, Feb. 14, 1967, Pat. No. 3,447,397

Filed July 16, 1970, Ser. No. 55,466

Int. Cl. B61c *9/32, 9/34*

U.S. Cl. 105—130 **3 Claims**



A method of operating a plurality of power transmissions, each having a single-speed power source, such as a gas turbine, and each also including a torque converter, hydraulically actuated gear selection clutches, and a hydraulic system, to result in a very smooth shift of gears at full speed of the vehicle.

3,626,862

RESILIENT DUAL AXLE DRIVE TRUCK

Gerhard Korn, Mulheim-Ruhr; Horst Konig, Hattingen, and Hans Dieter Klein, Heiligenhaus, all of Germany, assignors to Rheinstahl Huttenwerke AG, Essen, Germany

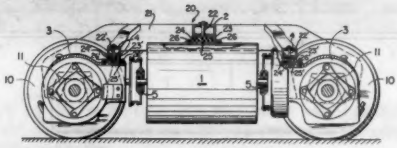
Filed July 15, 1969, Ser. No. 842,441

Claims priority, application Germany, July 16, 1968, G 67 50 770

Int. Cl. B60b *35/12;* **B61c** *9/44, 9/52*

U.S. Cl. 105—131 **6 Claims**

A dual axle drive for rail vehicles, having a pair of axles supported in a truck frame and each carrying a pair of wheels, includes a driving motor unit oriented in the direction of travel and driving the wheels through angle transmissions connected to opposite ends of the motor unit. The motor unit and the angle transmissions are separately supported from the truck frame, and each angle transmission includes a torque tube enclosing the central portion of an axle. Resilient torsional couplings connect each transmission to a respective opposite end of the motor unit. Torque tubes are provided on each axle, each enclosing the axle with clearance and each extending between the transmission torque tube and the adjacent wheel. Compensation couplings connect one end of each of these torque tubes to the transmission torque tube and the other end thereof to a wheel. The compensation couplings may be designed as torsion-resistant steel plate couplings and may connect either the web or a hub bushing flange of a wheel to the adjacent torque tube end. Braking devices are arranged on the input shafts of the angle transmissions.



3,626,863

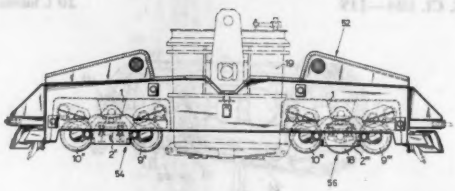
RAILWAY VEHICLE STUB AXLE TRUCK

Werner Trost, Duisburg-Wanheimerort, Germany, assignor to DEMAG Aktiengesellschaft, Duisburg, Germany

Filed July 15, 1969, Ser. No. 841,896

Int. Cl. B61d *15/00;* **B61f** *3/16, 5/36*

U.S. Cl. 105—180 **6 Claims**



A transport vehicle particularly having a truck of a type adapted to be run over a track and including a multiple number of axles and which is useable for the movement of molten metals inside and outside of a metallurgical plant includes a central balancer beam member having a centrally arranged journal which is adapted to receive the load of the vehicle. The balancer beam is connected to hinge pins which are eccentrically arranged in respect to the axles of a supporting wheel on each side of the balancer beam. The pivot pins are formed as eccentric extensions around the shafts of the associated wheels, and they also carry rocker arm members which extend outwardly from the respective wheels and are supported on transverse members which are located centrally below the journal of the balancer beam. The load which is transmitted downwardly to the balancer beam through the journals is transmitted to the pivot pins of each wheel and thence through the rocker arm members which bear downwardly on the transverse members. The transverse members are supported on springs in a manner to permit their upward or downward movement. In one embodiment, the springs are supported on fixed elements carried by the balancer beam. In still another embodiment, the springs are supported upon extensions of bearings for a third wheel which is adapted to be positioned between the other two.

3,626,864

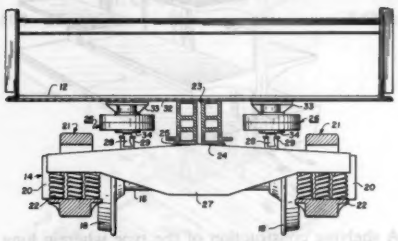
FLUID TRUCK SNUBBER

Donald Wiebe, Sewickley, Pa., assignor to A. Stucki Company, Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 534,220, Mar. 14, 1966, now abandoned, which is a continuation-in-part of application Ser. No. 468,850, July 1, 1965, now abandoned, and a continuation-in-part of 579,709, Sept. 15, 1966, now abandoned. This application Oct. 23, 1968, Ser. No. 801,884

Int. Cl. B61f *5/12, 5/14, 5/16*

U.S. Cl. 105—199 R 42 Claims



A suspension system for railway freight cars having hydraulic energy-absorbing devices with reciprocable members effective to damp the movement of a railway car with respect to the supporting trucks therefor and the method of absorbing energy occurring during such movement.

3,626,865

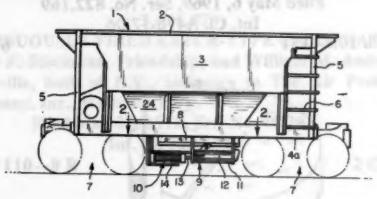
MOTOR-ACTUATED RAILWAY HOPPER CAR DOORS

Herman A. Aquino, Hobart, Ind., and James J. Schuller, Dolton, Ill., assignors to Pullman Incorporated, Chicago, Ill.

Filed Jan. 5, 1970, Ser. No. 752

Int. Cl. B61d *7/08, 7/18, 7/28*

U.S. Cl. 105—240 17 Claims



In a hopper car having a pair of bottom hopper doors opening from the center laterally outward to the side, door-operating mechanism on each side of the car for each door comprising a side mounted air cylinder having a ram moving outwardly to move a rolling or slidable carriage to which is universally connected a door arm link which in turn is universally connected to a door-locking bar mounted on the door and biased to open whereupon when the air cylinder operated ram retracts the door is swung from a down generally vertically hanging position to an upright horizontal position with the lock bar locking the door to the center structure on the car, there being a similar cylinder carriage and door link arrangement for closing and opening a laterally opposed door on the other side of the car.

3,626,866

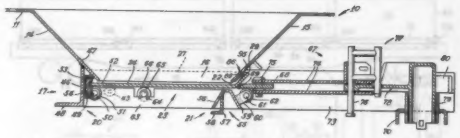
HOPPER OUTLET CONSTRUCTION WITH SEAL BETWEEN HOPPER AND GATE

William E. Fritz, Hinsdale, Ill., assignor to The Youngstown Steel Door Company, Cleveland, Ohio

Filed Mar. 19, 1970, Ser. No. 20,939

Int. Cl. B61d *3/00, 7/00, 9/00*

U.S. Cl. 105—282 R 6 Claims



A railway car hopper outlet has downwardly inclined side and end walls defining a discharge opening that is closed by a sliding gate having upturned sides and one upturned end underlying the lower margins of the side and one end wall of the hopper. A generally V-shaped resilient metallic sealing strip is interposed between the juxtaposed surfaces of the hopper walls and the upturned sides and end of the gate with one branch being secured to the hopper walls and the other branch engaging the sides and end of the gate under pressure applied from the interior or the car.

3,626,867

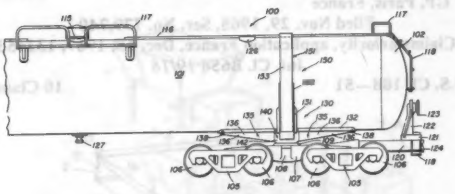
RAILWAY TANK CAR AND EXTERNAL SUPPORT RING THEREFOR

Carl E. Becker, Sharon, Pa., assignor to General American Transportation Corporation, Chicago, Ill.

Filed Aug. 22, 1969, Ser. No. 852,384

Int. Cl. B61f *1/14;* B61d *5/06*

U.S. Cl. 105—362 12 Claims

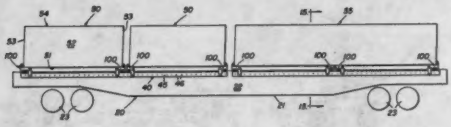


There is disclosed an external support ring for a railway tank car including a fluidtight tubular body shell supported by trucks positioned adjacent to the outer ends of the body shell, the external support rings at each end of the car transmitting draft, buff and rotational forces from one of the trucks to the body shell and from the body shell to the other truck. The external support ring has a channel-shaped cross section and is secured to the body shell around the entire periphery thereof forming therewith a boxlike structure, the support ring has a relatively thin cross section above the horizontal midplane of the body shell and a relatively thick cross section below the horizontal midplane, the above structure tends to provide uniform stress distribution in the support ring and to transmit buff, draft and rotational forces from one of the trucks to the body shell and from the shell to the other truck without substantially any underframe; the body shell may be of uniform diameter throughout.

3,626,868
TRANSPORTATION SYSTEM AND COMPONENTS THEREOF

Erling Mowatt-Larssen, Warren, Ohio, and Edward Milton Melin, Lansing, Ill., assignors to General American Transportation Corporation, Chicago, Ill.

Filed Sept. 4, 1969, Ser. No. 855,305
Int. Cl. B65j *1/22*
U.S. Cl. 105—366 A 30 Claims

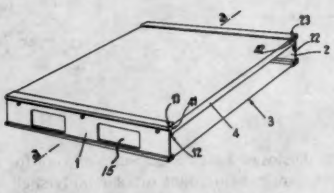


This invention is directed to a freight transportation system comprising a railway car for transporting freight containers including a frame, a pair of elongated longitudinally extending narrow beams carried by the frame, at least one pair of longitudinally extending rub rails mounted on the frame, the rub rails of each pair of rub rails being laterally spaced apart and including respectively outer surfaces having longitudinally spaced and laterally opposed openings therethrough, at least two pairs of bolsters arranged on the top surfaces of the beams and slidable longitudinally therealong, a lock assembly on each bolster selectively engageable with the openings in the rub rails for locking the bolster thereto in position to support a freight container on the upper surface thereof, a longitudinal stop mounted on each bolster and being shiftable between an operative position and a storage position, and a side lock assembly mounted on each bolster and engageable with the freight container to prevent lateral and vertical movement thereof, whereby freight containers of different lengths and different numbers of freight containers may be secured to the rub rails of the railway car by the two pairs of bolsters.

3,626,869
LOAD-CARRYING PALLET

Francois Colas, Bourg La Reine, France, assignor to Cegedur GP, Paris, France

Filed Nov. 29, 1968, Ser. No. 779,740
Claims priority, application France, Dec. 15, 1967, 132453
Int. Cl. B65d *19/18*
U.S. Cl. 108—51 10 Claims

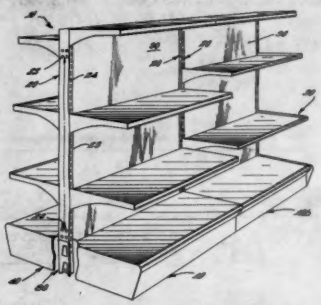


A pallet for supporting materials comprising a pair of end sections of similar construction formed of a vertically disposed end plate, a pair of flanges extending inwardly substantially perpendicularly from the upper end portion of the end plate in vertically spaced apart parallel relation and a slideway in the form of a tubular section on the lower end portion of each of the end plates, a panel dimensioned for its ends to be received between the respective flanged pairs of the end plates and a baseplate extending across the pallet with the ends of the baseplate received in engagement within the slideways and means for securing the elements in their assembled relationship to form the pallet.

3,626,870
SHELVING CONSTRUCTION

Edwin F. Schild, Palatine, Ill., assignor to Airway Products Corporation, Schiller Park, Ill.

Filed May 6, 1969, Ser. No. 822,239
Int. Cl. A47b *57/06*
U.S. Cl. 108—108 8 Claims

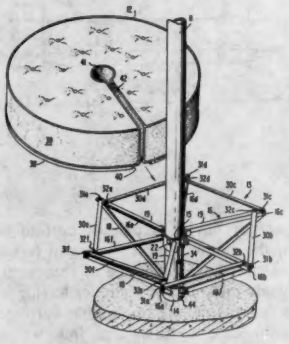


A shelving construction of the type wherein long rows of shelving are assembled from shelving units connected end to end. The shelving construction is provided with apparatus for connecting shelves to upright columns wherein the shelf-supporting brackets are provided with extended lever arms and the columns are provided with embossments or lances for bearing against the extended lever arms for increasing the permissible moment of the shelf. The shelving unit is also provided with apparatus for securing and supporting the upright columns of the shelving units for connection on an end-to-end basis wherein the lower end of the upright columns are provided with stiffening plates for increasing the rigidity thereof and the transverse supporting gussets are provided with members for aligning the end columns of adjacent shelving units and for supporting the aligned columns.

3,626,871
COLLAPSIBLE POLE SEAT

Washington Oliver McClendon, 2632 High Tower Ct., Atlanta, Ga.

Filed May 6, 1969, Ser. No. 822,169
Int. Cl. A47b *57/06*
U.S. Cl. 108—151 6 Claims



A platform or seat assembly for placement about a pole or post comprising a substantially annular platform positionable with its center opening surrounding the pole, and a framework positionable beneath the platform and around the pole for supporting the platform. The framework comprises a plurality of foldable support leg assemblies connected at their

top and bottom ends to collars surrounding the pole. The collars are movable toward each other along the length of the pole to fold the upper legs of each leg assembly out to a horizontal position where they are in the proper positions for supporting the platform. When the collars are moved away from each other, the legs of the leg assemblies are retracted to a position closely adjacent the pole.

3,626,872

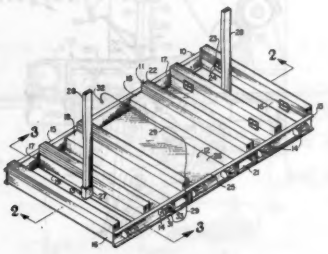
TIE-DOWN PALLET

Samuel J. Cully, East 6523 Broadway, Spokane, Wash.

Filed July 29, 1970, Ser. No. 59,287

Int. Cl. B65d *19/18*

U.S. Cl. 108—55 **3 Claims**



A large supportive pallet, having self-contained tiedowns and alignment posts, to carry relatively large arrays of lumber in combined truck-rail transportation. The pallet is of sufficient rigidity to be movable in loaded condition by forklift truck. The particular configuration provides wooden supports for both lumber and pallet with an internal void to carry ancillary structures and an external configuration adapted to allow pallet stacking for transportation and storage. The pallet is designed to make possible the economical rail transportation of lumber with truck delivery to and from railheads.

3,626,873

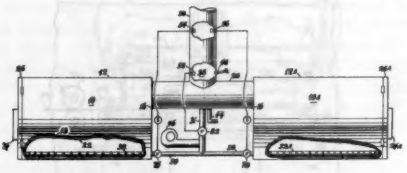
CONTINUOUSLY FIRED BATCH-TYPE INCINERATION

Richard F. Stockman, Friendship, and William M. Anderson, Wellsville, both of N.Y., assignors to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed May 22, 1970, Ser. No. 40,293

Int. Cl. F23g *5/00*

U.S. Cl. 110—8 R **2 Claims**



A "batch"-type incinerator that may be continuously loaded and fired to effect continuous incineration of waste material. The incinerator defined therefore has the advantages of both the "batch" and "continuously" loaded incinerators without the inherent disadvantages of either type.

3,626,874

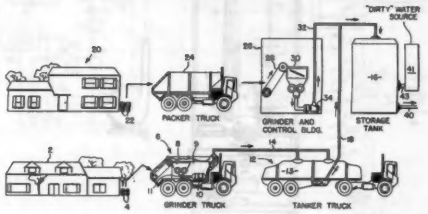
SYSTEM FOR COLLECTING AND DISPOSING OF ORDINARY REFUSE BY CONVERTING IT INTO USEFUL ENERGY, WITHOUT POLLUTION

Lloyd R. Grant, Penfield, N.Y., assignor to Action Concepts Technology, Inc., Rochester, N.Y.

Filed Oct. 22, 1968, Ser. No. 769,547

Int. Cl. F23g *3/00*

U.S. Cl. 110—8 R **15 Claims**



Ordinary refuse is collected, ground-up, oxidized by the liquid environmental combustion thereof, the combustion being controlled to generate heat in excess of that required to maintain the combustion, and the excess heat is converted into useful energy, such as electricity and steam.

3,626,875

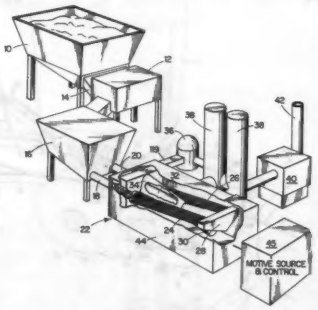
REFUSE DISPOSAL SYSTEM

Charles N. Cleaves, Northboro; Alvin M. Keller, and David C. Mauro, both of Marlboro, all of Mass., assignors to KCM Industries, Inc., Marlboro, Mass.

Filed Dec. 7, 1970, Ser. No. 95,832

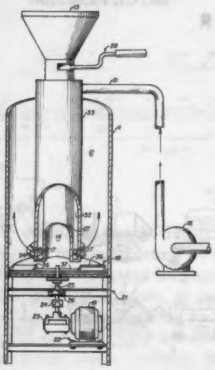
Int. Cl. F23g *5/04*

U.S. Cl. 110—14 **18 Claims**



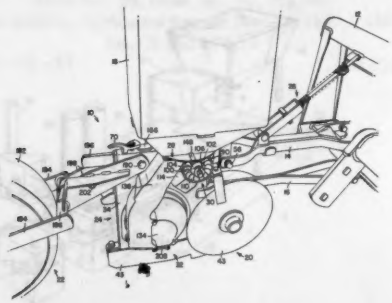
A system for the efficient disposal of solid and liquid refuse in which substantially uniform and complete combustion is achieved within a closed system with substantially no emission of harmful pollutants into the atmosphere. The system includes one or more rotary drying chambers for the drying and transport of shredded waste material to a rotary combustion chamber in which such material is consumed. Solid residue, mainly in the form of flyash, is collected in a water bath, while the gases of combustion are ignited in a secondary combustion chamber and processed to remove substantially all pollutants and cooled before release into the atmosphere.

3,626,876
RICE HULL BURNERS
Orian R. Gardner, 1866 23rd Ave., San Francisco, Calif.
Filed May 5, 1969, Ser. No. 821,897
Int. Cl. F23b *1/36*
U.S. Cl. 110—29 **18 Claims**



Apparatus for continuous burning of light combustible materials such as rice hulls under closely controlled condition, including a combustion chamber, means for feeding the combustible material and air to the chamber base and an agitator for dispersing the combustible material so that it is ignited and simultaneously carried upwardly through the combustion chamber. Use of the burning apparatus is further contemplated in combination with means for curing ash produced in the combustion chamber.

3,626,877
PLANTER
Harold Valentine Hansen, Cordova; Robert Leroy Chidester, East Moline, and Hans Joachim Roehricht, Rock Island, all of Ill., assignors to Diere &Company, Moline, Ill.
Filed Apr. 12, 1968, Ser. No. 720,895
Int. Cl. A01c *7/04*
U.S. Cl. 111—85 **4 Claims**

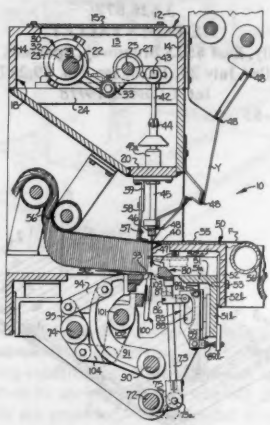


A row planting mechanism having a single seed hopper, the discharge of the hopper being selectively directed to either a sliding finger seed selector operable to select corn and similar crop seed for planting at evenly spaced intervals of 6 inches or more, or a single-run seed selecting mechanism operable to select sorghum, soy beans and similar crop seed for planting at intervals appreciably less than 6 inches.

ERRATA

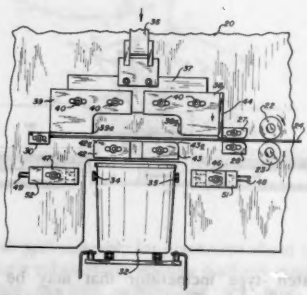
For Classes 111—77 and 111—6 see:
Patent Nos. 3,627,050 and 3,626,895

3,626,878
TUFTING MACHINE FOR FORMING SHAG-TYPE PILE FABRIC
James T. Cobble, Dalton, Ga., assignor to B & J Machinery Co. Inc., Dalton, Ga.
Filed Apr. 8, 1970, Ser. No. 26,603
Int. Cl. D05c *15/22*
U.S. Cl. 112—79 R **1 Claim**



This disclosure relates to a tufting machine for and method of forming a pile fabric of the shag-type. The apparatus includes means for supporting a backing fabric, means for feeding backing fabric across the supporting means and at least one tufting needle mounted above the supporting means for reciprocation and adapted to penetrate and carry a yarn through the backing fabric to successively form tufting loops therein. A first looper engages the tufting loops formed by the needle and reciprocates substantially perpendicular to the supporting means to elongate the tufting loops to shag pile length and a second looper cooperates with the first looper for receiving the elongated loops from the first looper and holds the elongated loops thereon and cooperates with a knife for severing these loops.

3,626,879
APPARATUS FOR APPLYING PLASTIC BAILS TO CONTAINERS
Raymond A. Heisler, 657 Dakota Trail, Franklin Lakes, N.J.
Filed May 20, 1970, Ser. No. 39,045
Int. Cl. B21f *45/00*
U.S. Cl. 113—1 J **16 Claims**



Apparatus is provided for forming and applying plastic bails or straps to eared containers whereon the ears are

diametrically disposed buttonlike protuberances attached or mounted on the sides of the containers. There is disclosed means for feeding the plastic bails or straps in both a longitudinal and in side-aligned manner to the applying mechanism. This mechanism causes the apertured ends of the straps to be brought into a condition and position to be pressed onto the large buttonlike protuberances formed or attached to the sides of the container.

3,626,880

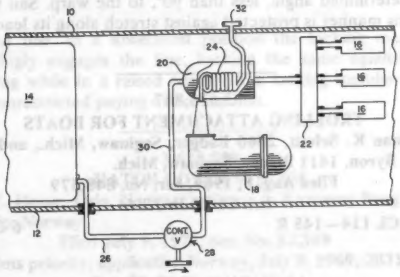
HOT GAS AUGMENTED BALLAST EXPULSION SYSTEM

Jules J. Schwartz, Wilmington, Del.; Herbert W. D. Cassidy, Elkton, Md.; Stanley A. Racik, Newark, and George M. D. Hart, Middletown, both of Del., assignors to Thiokol Chemical Corporation, Bristol, Pa.

Filed Feb. 25, 1970, Ser. No. 14,128

Int. Cl. B63g *8/00*

U.S. Cl. 114—16 E **3 Claims**



An improved compressed air ballast expulsion system for submersible craft with a thermal augmention system for the working fluid so as to increase the expulsion work and rate thereof. A gas generator surrounds the conduit between an air tank and a ballast tank. The gas generator discharges the hot gases externally of a submersible.

3,626,881

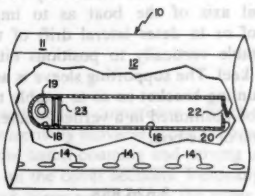
BALLAST EXPULSION FOR DEEP DIVING SUBMERSIBLES

Joseph J. Lovingham, Madison, N.J., assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed Feb. 25, 1970, Ser. No. 14,129

Int. Cl. B63g *8/00*

U.S. Cl. 114—16 E **4 Claims**



An improved ballast expulsion system for deep diving submersibles which employs a high-pressure auxiliary tank within the conventional ballast tanks to effect positive expulsion of the water ballast and additional buoyancy. A piston is mounted in each auxiliary ballast tank and moves towards a discharge end to expel ballast therefrom.

3,626,882

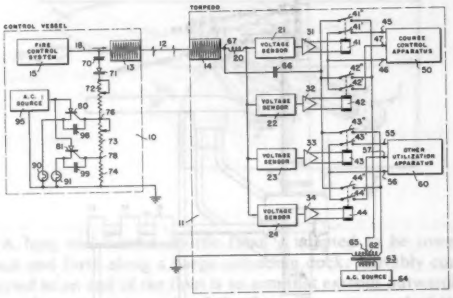
MONITORING APPARATUS

Gilbert E. Russo; Kenneth J. Meyers, both of Ellicott City, and Carl O. Buhlman, Baltimore, all of Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed May 18, 1965, Ser. No. 457,543

Int. Cl. F41g *7/02, 7/06;* F42b *19/36*

U.S. Cl. 114—21 R **8 Claims**



Apparatus for monitoring the operation of a wire-guided torpedo of the type having a number of control relays in the torpedo responsive to DC voltages from the control station. Each relay when actuated connects an AC source into the line, with a characteristic amplitude for each relay, providing an answer-back signal indicating proper operation of the relay. A voltage discriminating silicon controlled rectifier circuit in the control station responds to the answer-back signal lighting an indicator lamp to indicate which relay is actuated.

3,626,883

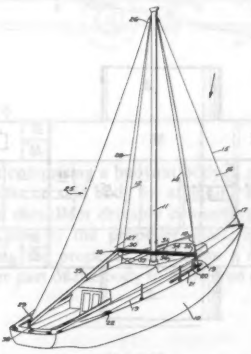
SAILING VESSEL WITH THE LUFF OF THE MAINSAIL CLEAR OF THE MAST

Daivd W. Ellis, 271 Lincoln Ave., Barrington, R.I.

Filed Nov. 10, 1969, Ser. No. 875,443

Int. Cl. B63b *35/00;* B63h *9/00*

U.S. Cl. 114—39 **5 Claims**



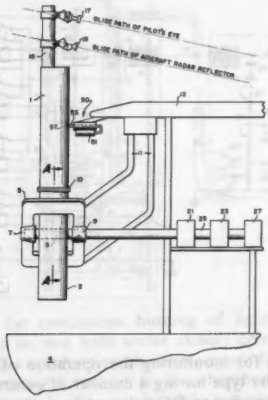
A sailing vessel in which the mainsail luff is set on a different plane than the mast to avoid wind turbulence aft of a supporting mast. A track is secured athwartship just aft of the mast and the tack of the mainsail moves along the track. The luff of the mainsail is sparless so as not to interfere with the airfoil.

3,626,884

LANDING AID ALIGNMENT MAST

Joseph R. Annibale, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 7, 1970, Ser. No. 61,956
Int. Cl. B63b *35/44*
U.S. Cl. 114—43.5 5 Claims



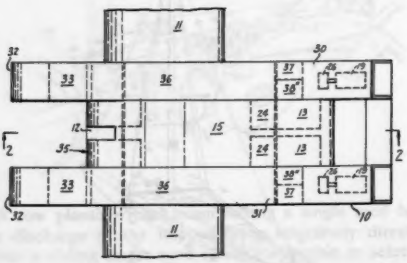
A pivoting mast which may be quickly raised or lowered and which has means for separating the mast from the pivoting support in cases of an emergency. The mast support structure is capable of supporting a mast structure heavy enough to have a natural frequency outside the range of ship's vibrations and capable of erecting the mast and holding it in its erected position within narrow tolerances so the landing aids may be critically aligned.

3,626,885

HIGH-SPEED PASSENGER SHIP

Andrew Beusch, 4806 West Ridge Road, Erie, Pa.

Filed Sept. 24, 1969, Ser. No. 860,556
Int. Cl. B63b *1/10*
U.S. Cl. 114—61 2 Claims



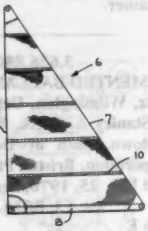
A ship for hauling passengers at high speed. The ship has a fuselage in the shape of a hydrofoil; relatively short wings extend from each side of the ship. Propellers driven by engines, one at each side, provide power for the ship. The ship has side compartments in the form of enlarged pontoons which contain passenger compartments and an intermediate section set back from the front and having a contoured top and recessed bottom.

3,626,886

SAILS

Thomas Cafiero, 40 Stoneleigh Road, Scarsdale, N.Y.

Filed Jan. 27, 1970, Ser. No. 6,143
Int. Cl. B63h *9/04*
U.S. Cl. 114—103 6 Claims



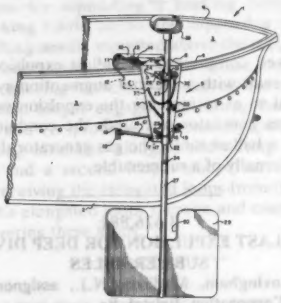
Sailcloth is provided wherein the woof is arranged at a predetermined angle, less than 90°, to the warp. Sail woven in this manner is protected against stretch along its leach and foot.

3,626,887

TROLLING ATTACHMENT FOR BOATS

Norman K. Schutt, 2860 Badger, Saginaw, Mich., and Leon L. Byron, 1411 Birney, Saginaw, Mich.

Filed Aug. 8, 1969, Ser. No. 848,579
Int. Cl. B63h *25/44*
U.S. Cl. 114—145 R 6 Claims



A trolling attachment for boats comprises a mounting bracket for attachment to one side of a boat and having a tubular support sleeve within which is rotatably and slideably accommodated a rod at the lower of which is secured a flat, substantially planer blade. The blade may be so oriented to the longitudinal axis of the boat as to impede forward progress thereof or to deter lateral drift of the boat. The blade is adjustable vertically to positions either above or below the boat keel. The supporting sleeve is adjustable relative to the mounting bracket so as to enable the blade supporting rod to be positioned in a vertical plane, regardless of the configuration of the boat.

3,626,888

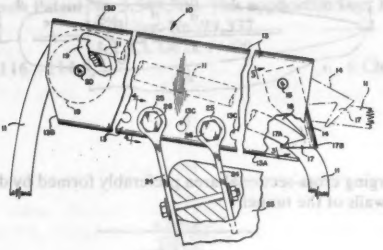
ANCHOR LINE LOCK

Donald L. Cameron, 83213 N. Rodgers Road, Creswell, Oreg., and Robert L. Gielish, Route 8, Box 5913, Pleasant Hill, Oreg.

Filed July 14, 1969, Ser. No. 841,403
Int. Cl. B63b *21/08*
U.S. Cl. 114—199 2 Claims

A device for adjustably securing an anchor line to the hull of a boat is disclosed. A housing through which the line

passes extends outwardly away from the boat hull to suspend a raised anchor. A line locking member is swingably mounted in the housing and is positionable by the manually controlled



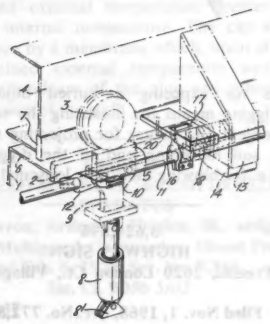
anchor line. In a lowermost position the locking member wedgingly engages the line, locking the same against the housing while in a raised position the locking member permits unrestricted paying out of the line.

3,626,889

HATCH COVER SYSTEM

Per E. Hover, Oslo, Norway, assignor to Kvaerner Brug A/S, Oslo, Norway

Filed July 9, 1970, Ser. No. 53,349
Claims priority, application Norway, July 9, 1969, 2871/69
Int. Cl. B63b *19/18, 19/24*
U.S. Cl. 114—203 **4 Claims**



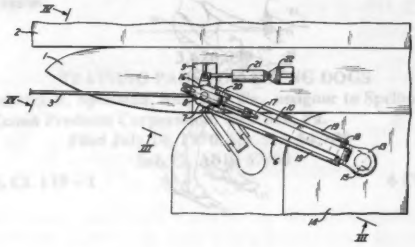
A hatch cover system comprising a hatch coaming and a number of horizontally movable cover sections. A set of rails mounted on the hatch coaming and serving as tracks to rollers mounted on the cover sections. Vertically moveable rail sections spaced correspondingly to the roller spacing on the cover section. Vertically extendable devices mounted on the hatch coaming in association with the vertically moveable rail sections. Horizontally extendable locking devices mounted in the hatch coaming adapted to engage the cover sections. A rotatable shaft mounted on the hatch coaming longitudinally of the same. Arms secured to the rotatable shaft and cooperating with the vertically and horizontally extending devices, respectively, such arms being angularly displaced relatively to each other.

3,626,890

BARGE HAULING APPARATUS

Bennie A. Rose, Mount Lebanon Township, Pa., assignor to Heyl and Patterson, Inc., Pittsburgh, Pa.

Filed July 29, 1970, Ser. No. 59,250
Int. Cl. B63b *21/00*
U.S. Cl. 114—235 R **10 Claims**



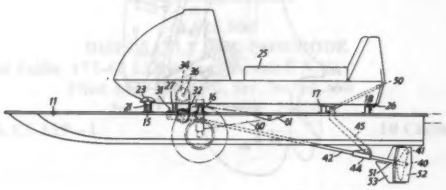
A long and narrow shuttle float is adapted to be towed back and forth along a barge-unloading dock. Movably connected to an end of the float is an arm that extends outwardly away from the outer side of the float. The outer end of the arm carries means for detachably connecting it to one end of a loaded barge beside the float. There are means for swinging the outer end of the arm inwardly toward the float to hold a barge engaged by it against the outer side of the float while it tows the barge back and forth by means of the arm. Means may also be mounted on the opposite end of the float to help hold the barge against the float.

3,626,891

AMPHIBIAN TRAILER

Donald Wilfred Sessions, Angmering-on-Sea, England, assignor to Forward Ideas Limited

Filed July 9, 1969, Ser. No. 840,285
Int. Cl. B60f *3/00*
U.S. Cl. 115—1 **4 Claims**



A watercraft comprising a buoyant body, a propeller shaft, connecting means on said body for attaching a power unit to the body, drive means for drivably connecting a driven part of the power unit to the propeller shaft, and means for pivotally moving the propeller shaft from a raised position above the lower part of the body to a lowered position below the water line.

3,626,892

HANDLE STRUCTURE FOR A WATER SKIING TOWLINE

Jack M. Humbert, 1878 Thelma St., Fortuna, Calif.

Filed Mar. 20, 1970, Ser. No. 21,437
Int. Cl. A63c *11/10*
U.S. Cl. 115—6.1 **15 Claims**

A handle structure attached to the free end of a towline to enable the same to be releasably gripped by a water skier.

The handle structure functions to augment or enhance the natural grip of the skier, and it may include a pair of individual handle structures respectively gripped by opposite hands of the skier or a single handle structure sufficiently large to be gripped by both hands. The handle structure in-

cludes a handhold component adapted to be gripped by the hand of a skier, and a compression member movable with respect to the handhold component and urged there toward into compressive engagement with the fingers of a hand gripping the same whenever a tensile force is applied to the towline.

3,626,893

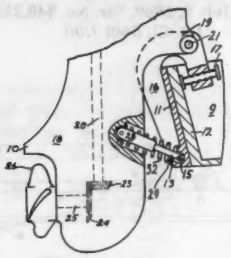
MOTOR MOUNT

Jan Zurakowski, Kartuzy Lodge, Barry's Bay, Renfrew, Ontario, Canada

Filed May 12, 1969, Ser. No. 823,696

Int. Cl. B63h *21/26*

U.S. Cl. 115—17 **14 Claims**



A motor unit for boats featuring an improved mounting structure. The mount of the motor is such to render it self-adjusting as to its orientation under conditions of changing thrust. The advantages of the invention are particularly evidenced under conditions of sudden and pronounced acceleration, under with conditions the motor will self-orient to stabilize the related boat and thereby avoid a substantially increased drag.

3,626,894

TUNNEL STERN BOAT

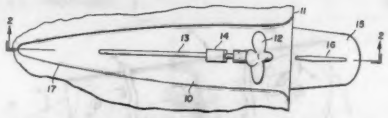
Robert B. Stuart, Penn Yan, N.Y., assignor to Penn Yan Boats Incorporated, Penn Yan, N.Y.

Filed June 1, 1970, Ser. No. 41,838

Int. Cl. B63h *5/16*

U.S. Cl. 115—39 **11 Claims**

The tunnel of a tunnel stern planing boat is given an improved shape for greater efficiency. The tunnel is gradually and smoothly enlarged as it extends aft toward the propeller, and it has a semicylindrical top fitting relatively closely over the propeller in the plane of the propeller. Then the tunnel extends aft of the propeller a short distance with a gradually



enlarging cross-sectional area preferably formed by divergent sidewalls of the tunnel.

3,626,895

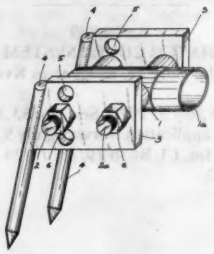
DEVICE FOR EXPOSING BURIED OBJECTS

David Enden, Kiryat Malachi, Moshav Dorot, Israel

Filed Sept. 15, 1969, Ser. No. 857,999

Int. Cl. A01c *23/02*

U.S. Cl. 111—6 **2 Claims**



Apparatus for exposing a buried object comprising pronglike digging means for loosening the soil surrounding the buried object and means for projecting a stream of air toward the soil loosening end of the digging means for removing (i.e. for blowing away) the loosened soil.

3,626,896

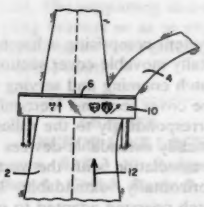
HIGHWAY SIGN

Frank W. Preeshl, 2620 London Ct., Village of Brunsville, Minn.

Filed Nov. 1, 1968, Ser. No. 772,503

Int. Cl. E01f *9/10*

U.S. Cl. 116—63 **1 Claim**



A highway sign having indicia thereon to indicate the location of an on-or-off ramp with respect to the sign.

3,626,897

RETENTION CAP FOR EXTENSIBLE STAFF-TYPE TEMPERATURE INDICATOR

George G. Kliewer, Fresno, Calif., assignor to Dun-Rite Manufacturing Corp., Fresno, Calif.

Continuation-in-part of application Ser. No. 801,362, Feb. 24, 1969, now Patent No. 3,548,780. This application Dec. 18, 1970, Ser. No. 99,337

Int. Cl. G01k *11/00*

U.S. Cl. 116—114.5 6 Claims

A retention cap for use in combination with a temperature indicator of the type having a staff received within a housing for axial extension relative thereto upon the attainment of a predetermined internal temperature. The cap is secured over the staff to restrain the staff against extension under cooking conditions wherein the predetermined internal temperature is achieved at a point in time prior to the time the cap reaches a predetermined external temperature greater than said predetermined internal temperature. The cap comprises a plug held in place by a membrane which, upon attainment of said predetermined external temperature weakens sufficiently to permit release of the plug and substantially unrestricted extension of the staff.

3,626,898

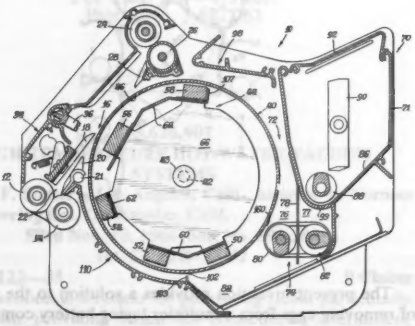
HIGH-SPEED MAGNETIC BRUSH DEVELOPER APPARATUS

Stanley A. Gawron, Arlington Heights, Ill., assignor to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

Filed Feb. 6, 1970, Ser. No. 9,316

Int. Cl. B05b *5/02*

U.S. Cl. 118—637 5 Claims



A high-speed magnetic brush assembly is provided in which an array of magnets are arranged inside a nonmagnetic cylinder to control the movement of the developer mixture of iron powder and toner. The cylinder rotates about the fixed magnets. One set of magnets attracts a quantity of mix to the cylinder and subsequent magnets transport the mix to the next station where a single or multiple magnets brush develops the paper. At another station, the magnet discharges the mix from the cylinder. The assembly is enclosed to contain the mix and includes a spillway for the mix leading to mixing chambers where the mix is reconditioned for reuse.

3,626,899

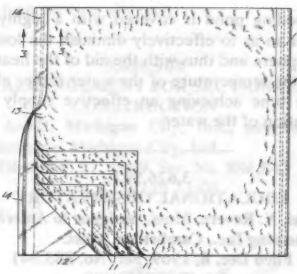
TRAINING PADS FOR YOUNG DOGS

Frederick R. Spellman, Blue Bell, Pa., assignor to Spellman & Zenon Products Corporation, Blue Bell, Pa.

Filed July 14, 1970, Ser. No. 54,788

Int. Cl. A01k *67/00*

U.S. Cl. 119—1 6 Claims



Absorbent material lined on one side thereof with fluid impervious material is impregnated with an odor imparting substance which attracts young dogs to the pads for the purpose of urination and defecation and discourages chewing of the pad by the young dog.

3,626,900

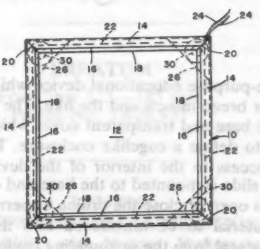
DISPOSABLE DOG COMMODE

Fred Failla, 172-42 133rd Ave., Jamaica, N.Y.

Filed Aug. 10, 1970, Ser. No. 62,368

Int. Cl. A01k *15/00, 29/00*

U.S. Cl. 119—1 10 Claims



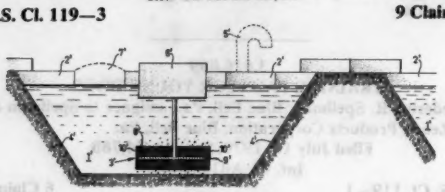
An inexpensive disposable dog commode comprising a preferably square, flexible sheet of moistureproof material adapted to be spread upon a flat-supporting surface such as a floor, pavement or the like and be held in such position while the dog uses the same, followed by the contraction of the edges and corners of the sheet to enclose the excrement for disposal in a suitable waste receptacle.

3,626,901

PROCEDURE AND ARRANGEMENT FOR BREEDING OF FISH

Sixten Englesson, Djursholm, Sweden, assignor to Stenberg-Flygt AB, Solna, Sweden

Filed May 13, 1969, Ser. No. 824,120
Claims priority, application Sweden, Jan. 23, 1969, 924/69
July 1, 1968, 9040/68
Int. Cl. A01k *63/00*
U.S. Cl. 119—3 9 Claims



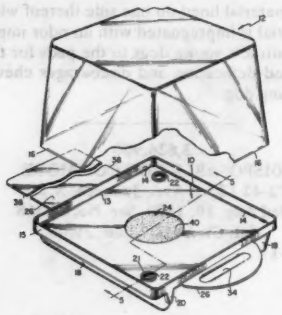
A fish-breeding pond is covered with a highly insulating floating layer so as to effectively diminish the losses of heat to the atmosphere and thus with the aid of the heat of the soil to maintain the temperature of the water rather above 5° C., at the same time achieving an effective supply of oxygen through aeration of the water.

3,626,902

EDUCATIONAL OBSERVATORY

John B. Orfei, N. Revere, Mass., assignor to American Science and Engineering Inc., Cambridge, Mass.

Filed Dec. 8, 1969, Ser. No. 883,041
Int. Cl. A01k *1/00*
U.S. Cl. 119—15 14 Claims



A multiple-purpose educational device which may be used to observe or breed insects and the like. The device includes a detachable base and transparent cover which are sealed in normal use to define a cagelike enclosure. The base has an orifice for access to the interior of the device. A specially constructed slide is mounted to the base and cooperates with the orifice to open or close the orifice to permit insects, food or other material to be introduced into the device while maintaining a seal from the surrounding environment.

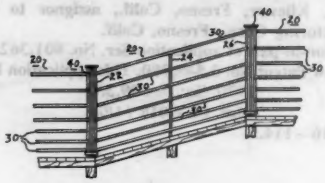
3,626,903

ANIMAL PEN STRUCTURE

Carl Van Gilst, Goshen, Ind., assignor to Bangor Punta Operations, Inc., New York, N.Y.

Filed Feb. 9, 1968, Ser. No. 704,482
Int. Cl. A01k *1/02*
U.S. Cl. 119—20 6 Claims

A structure for pens for animals such as hogs, in which the panels are constructed of a plurality of horizontal members connected to one another by a single pinlike element to permit the panel to adjust to off-level surfaces. A postlike



member is used to connect the ends of the panels to form pens of various configurations.

3,626,904

CONCRETE SLAT ANIMAL FLOOR STRUCTURE

Edward J. Hatten, Stacyville, Iowa

Filed May 7, 1970, Ser. No. 35,319
Int. Cl. A01k *1/00*
U.S. Cl. 119—28 5 Claims

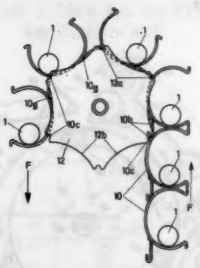
An animal slat floor structure of precast reinforced concrete slats. Each slat includes an integral precast spacer only on one end and in the assembly of a plurality of slats to form a floor structure, the relative position of the spacer end is alternated so that no spacer end on any one slat is in contact with the spacer end on an adjacent slat. This slat provides a self-spacing floor arrangement and the selected size of the spacer end determines the desired spacing dimension between adjacent slats.

3,626,905

REMOVAL OF EGGS FROM TIERED CAGES

Hans Giesbert, Mombris; Walter Fecher, Aschaffenburg; Eberhard Fabian, Kleinkahl, and Walter Sauer, Aschaffenburg-Lieder, all of Germany, assignors to Hans Giesbert Kommandgesellschaft, Mombris, Germany

Filed Jan. 20, 1970, Ser. No. 4,276
Claims priority, application Germany, Jan. 31, 1969, P 19 38 895.5
Int. Cl. A01k *31/06, 31/16*
U.S. Cl. 119—48 3 Claims



The present invention provides a solution to the problem of removing eggs from a multitier laying battery composed of a plurality of stacked juxtaposed cages. The floors of the cages are so inclined that eggs lying on the floors roll by gravity to a common plane in each tier level. In each such plane there is a conveyor means for receiving and advancing

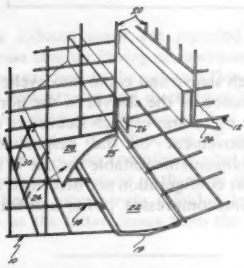
eggs from the cages of the tier to a common vertical plane from which latter there is spaced a horizontal conveyor. A second conveyor means in one path thereof parallels the aforesaid vertical plane and this second conveyor means is provided with cup-form egg receivers for "grasping" an egg during transport of the egg on said second conveyor means. The apparatus also includes injection means between the second conveyor means and the aforesaid vertical plane for moving eggs into said cups and also ejection means for removing eggs from said cups onto said horizontal conveyor. The several parts of the apparatus may be coated with plastics.

3,626,906

EGG GUARD FOR POULTRY CAGES

Willis R. Voran, Zeeland, Mich., and Harvey Z. Burkholder, Ethrata, Pa., assignors to U.S. Industries, Inc., New York, N.Y.

Filed Dec. 22, 1967, Ser. No. 692,841
Int. Cl. A01k *31/16*
U.S. Cl. 119—48 **5 Claims**



An egg guard for poultry confinement cages of the type having openings at the juncture of a side and the bottom of the cage through which eggs laid in the cage may move outwardly to be collected, the egg guard comprising an elongated member extending along the aforesaid juncture of side and bottom and over the egg-passage openings and having a smoothly curved cross-sectional configuration devoid of angular corners.

ERRATUM

For Class 122—479 see:
Patent No. 3,627,062

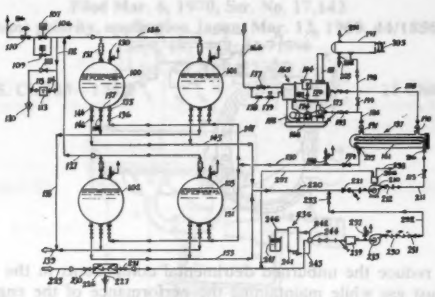
3,626,907

HIGH-TEMPERATURE HOT-WATER VACUUM SYSTEMS

Edward F. Slattery, Los Angeles, Calif., assignor to Norman Engineering Co., Los Angeles, Calif.

Filed Nov. 10, 1966, Ser. No. 593,388
Int. Cl. F22b *37/22*
U.S. Cl. 122—35 **9 Claims**

The invention is a system for generating steam particularly adapted for providing steam for economical, intermittent vacuum-pumping capability for process systems utilizing steam-driven ejectors. There is no boiler in the system. Water accumulators are provided connected to a shell- and tube-type heat exchanger in which the water is heated under gradually increasing pressure up to a given maximum. The water under substantial pressure in the accumulators is flashed into steam as desired, thru a control valve for use at the steam-driven vacuum ejectors.

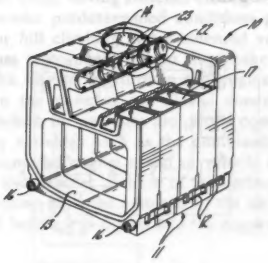


3,626,908

SEALING ARRANGEMENT FOR SECTIONAL BOILER CONSTRUCTION

William C. Arndt, Michigan City, Ind., assignor to Weil-McLain Company, Michigan City, Ind.

Filed Dec. 22, 1969, Ser. No. 886,843
Int. Cl. F22b *23/00*
U.S. Cl. 122—231 **8 Claims**



An arrangement for sealing the intersectional fluid passages of a sectional boiler. A rigid ring or other member is used to align and retain in position the adjacent boiler sections, while a deformable seal is used to provide a fluidtight seal between the sections.

ERRATUM

For Class 123—185 see:
Patent No. 3,626,937

3,626,909

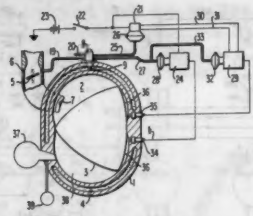
ROTARY PISTON INTERNAL COMBUSTION ENGINE

Motoyuki Hayashida, and Mutsuo Wakamoto, both of Hiroshima, Japan, assignors to Toyo Kogyo Company Limited, Hiroshima, Japan

Filed June 17, 1970, Ser. No. 46,851
Claims priority, application Japan, June 17, 1969, 44/48094
Int. Cl. F02b *53/12*
U.S. Cl. 123—8.05 **5 Claims**

A rotary piston internal combustion engine has two spark plugs in one combustion chamber and divides the range of the operating states of the engine into those lying below and above a predetermined temperature value for the engine or

exhaust gas and below or above a predetermined intake vacuum pressure wherein the ignition timing of the respective spark plugs is controlled depending upon the state so as



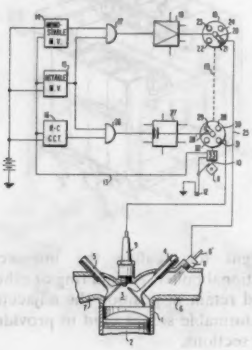
to reduce the unburned detrimental components in the exhaust gas while maintaining the performance of the engine responsive to the four operating states.

3,626,910

IGNITION AND INJECTION CONTROL FOR INTERNAL COMBUSTION ENGINE

Ferdinand Anton Ernst Porsche, Stuttgart-Nord, and Paul Breyer, Rutesheim, both of Germany, assignors to Firma Dr. Ing. h. c. F. Porsche K.G., Stuttgart-Zuffenhausen, Germany

Filed Nov. 25, 1968, Ser. No. 778,561
Claims priority, application Germany, Dec. 20, 1967, P 15 76 323.2
Int. Cl. F02m *57/00*
U.S. Cl. 123—32 EA **3 Claims**



An external ignition internal combustion engine is provided with semiconductor controls for the fuel injection and spark plug ignition, which provide a plurality of injections and ignitions for each cycle of each cylinder at low speeds, which plurality reduces in number in correspondence with increased engine speed.

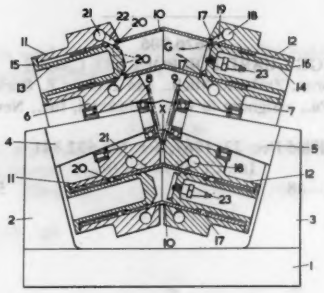
3,626,911

ROTARY MACHINES

Harry Shaw, Aldershot, England, assignor to Minister of Technology in Her Britannic Majesty's Government of the United Kingdon of Great Britain and Northern Ireland, London, England

Filed Feb. 2, 1970, Ser. No. 7,678
Claims priority, application Great Britain, Feb. 4, 1969, 5,893/69
Int. Cl. F02b *53/00*
U.S. Cl. 123—45 **12 Claims**

An engine has two rotor drums having their axes set at an included angle of 150° to each other. A similar number of bores is provided in each rotor and are connected by sleeves which are cranked at their midpoints to the same angle as that between the rotor axes. The sleeves are free to slide and rotate in the bores and have their outer ends closed by cylindrical members attached to the respective rotors and extending axially into the sleeves. On rotation of the rotors, the cylindrical members reciprocate relative to the sleeves and may be regarded as opposed pistons. Inlet ports are provided



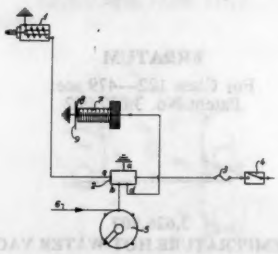
in one arm of each sleeve and come into cyclic register with inlet ducts by rotation of the sleeves in the bores. Large exhaust ports in the other arm of each sleeve are uncovered by relative axial movement of the respective cylindrical member. Port arrangements suitable for use in a compressor of generally similar configuration are described and combinations such as engine/compressor, power unit/transmission are envisaged.

3,626,912

DEVICE FOR REGULATING THE SUPPLY OF CARBURANT TO AN INTERNAL COMBUSTION ENGINE

Fernand Grosclaude, 49, rue du Midi, 2610 Saint Imier, Switzerland

Filed Mar. 11, 1970, Ser. No. 18,640
Claims priority, application Switzerland, Mar. 28, 1969, 4796/69
Int. Cl. F02d *9/00, 11/10*
U.S. Cl. 123—97 B **6 Claims**



An internal combustion engine is fitted with an electromagnetically operated slow running jet and switch means operated by the accelerator pedal controlling means for interrupting the feed from the slow running jet during deceleration and idle running. A transistorized circuit reestablishes the supply from the slow running jet when the engine drops below a given speed according to the frequency of impulses supplied to the circuit, this frequency depending upon the engine speed.

3,626,913

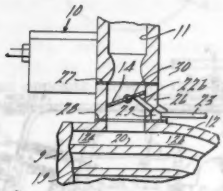
EXHAUST VELOCITY CONTROL OF EXHAUST RECYCLING

Jorma O. Sarto, Orchard Lake, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Original application Mar. 17, 1969, Ser. No. 807,785, now Patent No. 3,542,003. Divided and this application Apr. 13, 1970, Ser. No. 27,553

Int. Cl. F02m *25/06*

U.S. Cl. 123—119 A 5 Claims



Automobile exhaust gases are recycled by means of a restricted bypass conduit having an upstream end comprising a pitot opening exposed to the velocity flow of exhaust gases and having a downstream end discharging into the fuel and air inlet system, such that the bypass flow of exhaust gases into the inlet system is a function of engine load. The downstream end may also comprise a pitot-type opening exposed to the velocity pressure of the inlet flow at wide open throttle and being increasingly shielded by the customary throttle valve as the latter closes from the wide open position.

3,626,914

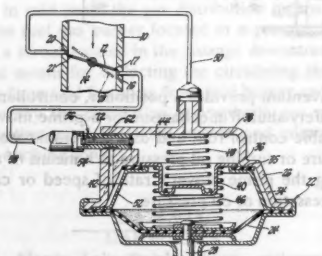
IGNITION TIMING CONTROL AND VACUUM CONTROL UNIT

Donald A. Brownson, Flushing, and Wayne S. Schoeppach, Mount Morris, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 15, 1969, Ser. No. 885,059

Int. Cl. F02p *5/10*

U.S. Cl. 123—117 A 7 Claims



A vacuum control unit in an ignition timing control system has a stop member which permits only partial vacuum advance during closed throttle operation and which is moved to permit full vacuum advance during open throttle operation.

3,626,915

VEHICULAR AIR-POLLUTION PREVENTIVE SYSTEM

Yasuo Nakajima, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

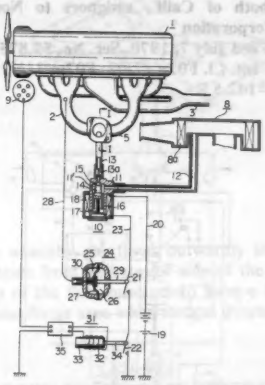
Filed Mar. 6, 1970, Ser. No. 17,142

Claims priority, application Japan, Mar. 13, 1969, 44/18565

Sept. 11, 1969, 44/71594

Int. Cl. F02m *23/04*

U.S. Cl. 123—124 B 11 Claims



A vehicular air-pollution preventive system for use with an internal combustion engine, which system is adapted to reduce the quantity of nitrogen oxides produced during acceleration or hill climbing in such quantities as to cause a serious air-pollution problem especially when the vehicle is driven in urban areas, having switches closing when the vehicle is driven under predetermined conditions providing the acceleration or hill climbing and a solenoid valve which is adapted to pass atmospheric air to the intake manifold to lean out of the air-fuel mixture in the engine combustion chamber when the switches are closed concurrently. The conditions in which the switches are closed concurrently are represented by variables such as the combination of intake manifold vacuum and engine speed or vehicle speed and of vehicle speed and angular position of the carburetor throttle valve. Atmospheric air to be admixed to the air-fuel mixture may be heated before it is drawn into the engine combustion chamber.

3,626,916

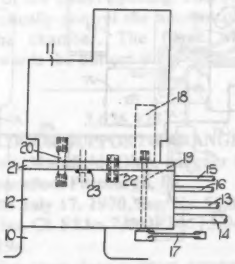
ATTACHMENT MEANS FOR CONTROL APPARATUS ON ENGINES

Harry Simister Bottoms, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Continuation of application Ser. No. 721,854, Apr. 16, 1968, now abandoned. This application Jan. 12, 1970, Ser. No. 1,977

Int. Cl. F02d *51/00*

U.S. Cl. 123—139 1 Claim



Attachment means for attaching a fuel control apparatus to an engine comprises formations on the body of the ap-

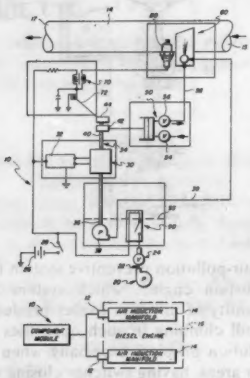
paratus, engaging complementary formations on the engine or on a part attached thereto, the formations enabling simultaneous mechanical, fuel pipe and/or other connections to be made.

3,626,917

DIESEL ENGINE STARTING AID

Richard H. Tromel, Canoga Park, and Paul C. Thys, Pacoima, both of Calif., assignors to North American Rockwell Corporation

Filed July 7, 1970, Ser. No. 52,875
Int. Cl. F02n *17/02;* **F02m** *31/02*
U.S. Cl. 123—142.5 R **10 Claims**



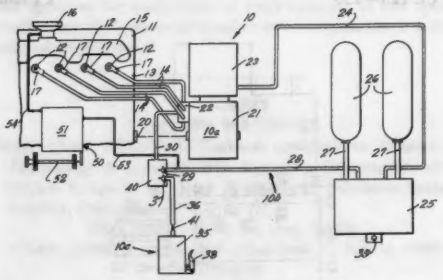
A self-contained air heating apparatus adapted to be mounted on an intake manifold of a diesel engine basically consists of a DC motor which performs the triple function of driving a liquid fuel pump, an air compressor, and the breaker points of an autotype of ignition distributor by a system of direct coupling and cam rings on a single shaft of the motor. A fuel atomizer cooperating with the components driven by the motor sprays a fine mist of liquid into at least one air induction manifold whereupon it is ignited by a sparkplug located adjacent the mist pattern.

3,626,918

STARTING SYSTEM FOR DIESEL ENGINES

Arthur M. Brenneke, New Castle, Ind., assignor to TRW Inc., Cleveland, Ohio

Filed July 18, 1969, Ser. No. 842,901
Int. Cl. F02n *17/00, 7/00, 13/00*
U.S. Cl. 123—179 F **1 Claim**



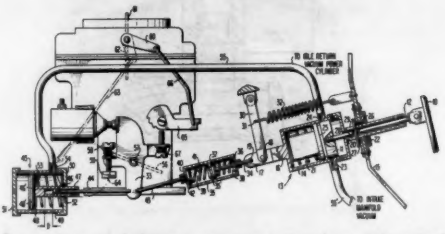
A starting system for diesel engines which sequentially provides pressured gas directly to the cylinders to initiate engine turnover. The gas is supplied either from a compressed air storage or from a chemical pressure generator capable of supplying high-pressure, high-temperature gases. The chemical pressure generator supplied gases initiate engine turnover while heating the engine to a point necessary for combustion in low-temperature environments.

3,626,919

FAIL-SAFE THROTTLE CONTROL

Charles W. MacMillan, 3400 20th St. Ct., Rock Island, Ill.

Filed Nov. 10, 1970, Ser. No. 88,450
Int. Cl. F02b *77/08;* **F02d** *11/04;* **B60k** *27/08*
U.S. Cl. 123—198 DB **14 Claims**



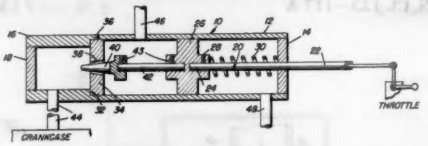
A spring-actuated valve or switch means which is interposed into the accelerator linkage of a motor vehicle acted upon by opposing forces of the accelerator pedal foot pressure and the throttle return spring pressure either to return the engine to idle or disconnect the ignition when in cooperation these forces indicate throttle linkage sticking or failure.

3,626,920

POSITIONER, CONTROLLER AND GOVERNOR OR SAFETY SHUTOFF MECHANISM FOR A PRIME MOVER

James F. Maher, P.O. Box 68, Kirtland, N. Mex.

Filed Oct. 28, 1969, Ser. No. 871,896
Int. Cl. F01m *1/24;* **F02b** *77/00*
U.S. Cl. 123—198 DB **4 Claims**



This invention provides a positioner, controller and governor or safety shutoff mechanism for a prime mover having a reciprocable control rod, and uses the crankcase lubricating oil pressure or turbine oil pressure as a means of adjusting or governing the prime mover's rate of speed or causing it to stop on cessation or oil pressure.

3,626,921

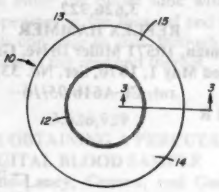
ABRASIVE CUTTING ELEMENT

Richard L. Lane, Penfield, N.Y., assignor to Kayex Corporation

Filed Nov. 28, 1969, Ser. No. 880,694
Int. Cl. B28d *1/04*
U.S. Cl. 125—15 **7 Claims**

A sawblade having an abrasive grid bonded to an edge so as to form a cutting portion. The surfaces of the sawblade at

the edge to which the abrasive grit is bonded are convergent or tapered toward each other and the outer surfaces of the abrasive grit forming the cutting portion are also convergent



or tapered in an opposite sense so that the cutting portion has additional thickness and is provided with a cutting clearance angle.

3,626,922

FORCED CONVECTION OVEN

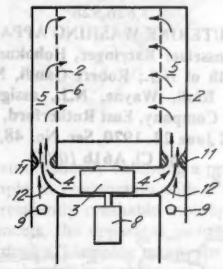
Donald Richard Borge, London, England, assignor to The Gas Council, London, England

Filed Feb. 2, 1970, Ser. No. 7,684

Claims priority, application Great Britain, Jan. 31, 1969, 5,403/69

Int. Cl. F24c *15/32*

U.S. Cl. 126—21 A **3 Claims**



A gas fired forced convection oven comprises a heating or cooking zone, fan means for circulating a hot gaseous atmosphere in said zone, the gas distribution means including at least one fuel gas burner located in a passage leading to said zone, a throat located in the passage downstream of said burner and means for deflecting the circulating atmospheric gas issuing from said fan away from said burner and into said throat whereby the circulating atmospheric gas mixes with the combustion gases from the burner and enters the said heating or cooking zone.

3,626,923

GAS BURNER

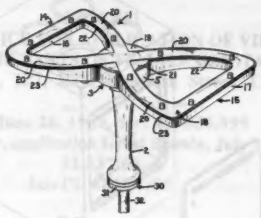
Norman L. Martin, Lake Quivira, Kans., assignor to Locke Stove Company, Kansas City, Mo.

Filed Apr. 9, 1970, Ser. No. 26,822

Int. Cl. A47j *37/00;* **F24c** *3/00*

U.S. Cl. 126—41 R **12 Claims**

A gas burner for grills and the like has a fuel supply conduit communicating with a fuel receiving chamber having an open top and a plurality of open top flow passages extending therefrom. A cap member is securely positioned in spaced relation immediately above and in covering relation with upwardly facing edges of wall portions defining the open top of the receiving chamber and the flow passages extending therefrom to define a substantially continuous fuel exit slot



therebetween whereby gas flows outwardly in substantially continuous sheets from an exterior side of the chamber and opposite sides of the flow passages to form a large substantially continuous flame area when the gas sheets are ignited.

3,626,924

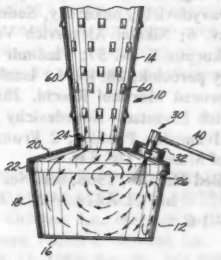
DOWN DRAFT SPACE HEATER

Kenneth J. Sheppard, Sunnyside, Wash., assignor to Spot Heaters, Inc., Sunnyside, Wash.

Filed Aug. 12, 1969, Ser. No. 849,385

Int. Cl. A01g *13/06*

U.S. Cl. 126—59.5 **7 Claims**



The heater comprises a large volume vaporization-combustion chamber formed by bottom, side and top walls of sheet metal. An outlet-radiation stack extends upwardly from a central outlet opening the the top wall. A fuel nozzle extends downwardly through a central opening in a mounting cap and primary air inlet openings are formed in the cap about the fuel nozzle. The cap fits on an upstanding flange which borders an inlet opening formed in the top wall, radially outwardly of the outlet opening. Fuel flow regulation is used to automatically control the amount of primary air induced into the chamber. The flame travel is initially downwardly towards the bottom wall.

3,626,925

OVEN DOOR SUPPORT ARRANGEMENT

Robert F. Dalton, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

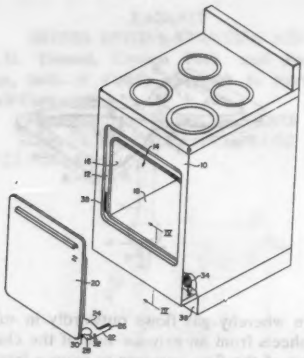
Filed July 17, 1970, Ser. No. 55,823

Int. Cl. F23m *7/00;* **F24c** *15/04*

U.S. Cl. 126—194 **9 Claims**

An inexpensive oven door support arrangement in which the hinge arms of the door are supported by a frame including a pivot bar forming an upper portion of the frame which

is held in place by the range body structure, and a lower portion of the frame which is supported for vertical adjustment from another portion of the range body the arrangement also



including tension springs which pull the hinge arms into a position in which open sided slots on the hinge arms seat on the upper portion of the frame assembly.

3,626,926

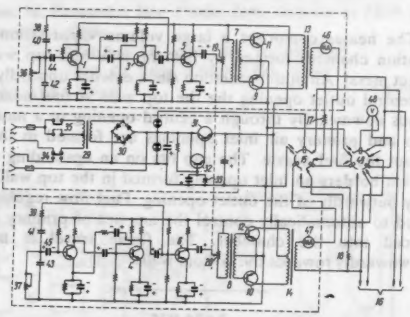
APPARATUS FOR CONTROLLED INHIBITION OF THE CENTRAL NERVOUS SYSTEM IN MAN OR ANIMAL, MOSTLY FOR ELECTRONARCOSIS

Mikhail Ilich Kuzin, Leninsky prospekt, 60/9, kv. 76; Samvel Artushovich Agasarian, 3 Parkovaya ulitsa, 33, kv. 35; Vladimir Davydovich Zhukovsky, Sadovaya-Samotechnaya ulitsa, 7, kv. 6; Nikolai Alexeevich Volkov, 3 Parkovaya ulitsa, 46, korpus 2, kv. 57; Vladimir Iosifovich Sachkov, Podsosensky pereulok, 18, kv. 6.; Isaak Zakharovich Rukhovets, 6 proezd Marlinoi Roschi, 28/30, kv. 3.; Nikolai Mitrofanovich Liventsev, Novodevichy proezd, 2, kv. 115, and Boris Ivanovich Panfilov, 2 Frunzenskaya ulitsa, 10, kv. 34, all of Moscow, U.S.S.R.

Filed Mar. 29, 1968, Ser. No. 717,127

Int. Cl. A61n *1/08, 1/34*

U.S. Cl. 128—1 C **1 Claim**



An apparatus is provided for controlled inhibition of the central nervous system of humans and animals, mostly for electronarcosis. The apparatus comprises a pair of electrodes adapted for controlled application of current to a patient and at least two alternators coupled to the electrodes and adapted for generating different frequency currents capable of applying interferential currents to the patient. Each alternator has a respective voltage amplifier and power amplifier and a power supply unit is provided for the alternators. Connected to the outputs of the voltage amplifiers is an electromechanically operated current regulator for controlling the degree and intensity of the inhibition applied to the electrodes and thus to the central nervous system.

3,626,927

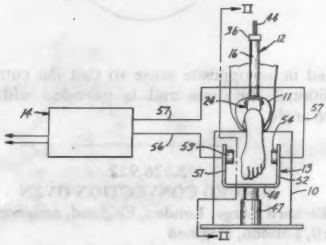
REFLEX HAMMER

James C. Breneman, 10571 Miller Drive, Galesburg, Mich.

Filed May 1, 1970, Ser. No. 33,626

Int. Cl. A61b *05/16*

U.S. Cl. 128—2 R **5 Claims**



A method for causing a reflex action in a foot by striking the Achilles tendon so that a part of the foot passes through light directed from a source at a photosensitive device and thereby produces a signal which is converted into a linear trace accurately indicating the movement of the foot.

3,626,928

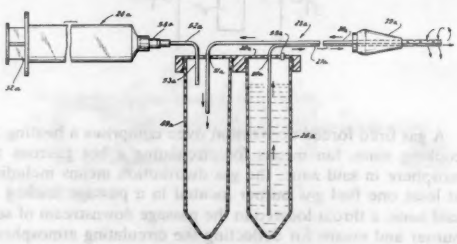
INTRAUTERINE WASHING APPARATUS

Hulbert Van Rensselaer Barringer, Hohokus; George Brody, Waldwick, both of N.J.; Robert Gandi, New York, N.Y., and Arduino Riuli, Wayne, N.J., assignors to Becton, Dickinson and Company, East Rutherford, N.J.

Filed June 22, 1970, Ser. No. 48,023

Int. Cl. A61b *10/00*

U.S. Cl. 128—2 R **11 Claims**



An intrauterine washing device including an inlet and an outlet tube in adjacent relationship with their forward end portions adapted to be inserted into the uterus. The tubes are open at their rear ends and have a plurality of openings in their forward end portions. Adjustable sealing means is positioned on the tubes so that when the forward end portions of the tubes are inserted into the uterus, the sealing means may be positioned so as to seal the entrance to the uterus. A connector is mounted on the rear end of at least one of the tubes and is associated with the rear end of the other tube. Means are positioned on the connector for mounting a source of washing fluid thereon in communication with the rear end of the inlet tube. Additionally, means are positioned on the connector for mounting a source of suction thereon in communication with the rear end of the outlet tube. In this manner,

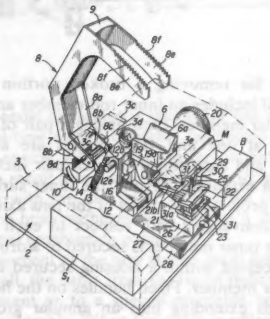
when suction is applied to the device sealed in position with respect to the uterus a negative pressure will be provided in the uterus and washing fluid will flow from a connected source of washing fluid through said inlet tube and into the uterus through the openings in the forward end portion of the inlet tube. Cells and other matter will be accumulated from the uterus and will enter the outlet tube with the washing fluid through the openings in the forward end portion of the outlet tube and will continue to pass through the length of the tube for collection at the rear end thereof.

3,626,929

APPARATUS FOR OBTAINING A PERCUTANEOUS AND DIGITAL BLOOD SAMPLE

Manuel Sanz, Grand-Lancy, Geneva, and Georges Revillet, Petit-Lancy, Geneva, both of Switzerland, assignors to Micromedic Systems, Inc., Philadelphia, Pa.

Filed July 18, 1969, Ser. No. 843,016
Claims priority, application Switzerland, July 26, 1968, 11272/68
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 R **12 Claims**



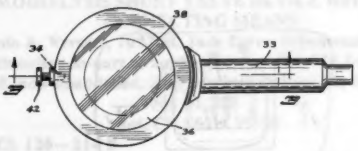
Apparatus for automatically obtaining a percutaneous and digital blood sample in conjunction with a blood collector device having a resiliently crushable mouthpiece housing a pair of incisor lancets, the apparatus including a mounting for the collector device, clamping means for holding the tip of a finger on the crushable mouthpiece, a mechanism for striking the collector device in the mounting to drive the lancets into the finger, and means for massaging the finger to cause blood to flow out of the resulting incisions.

3,626,930

LENS RADIATION COLLECTING AND SENSING DEVICE

Irwing N. Toftness, 1425 2nd Ave., Cumberland, Wis.

Filed Dec. 15, 1969, Ser. No. 885,150
Int. Cl. A61b *06/00*
U.S. Cl. 128—2 H **7 Claims**



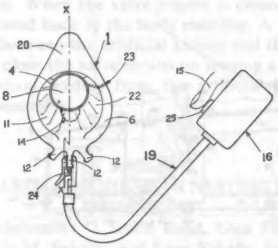
A housing embodying a lens system, the lenses of said system being comprised of components providing a clear window for a radiation on the order of 69.5 gHz. the lower of said lenses having a greater lens area and a greater focal length than the upper of said lenses to collect a wide spherical angle of said radiation to focus the same upon a detection plate carried by said housing for sensory detection of said radiation, and means carried by said housing for adjustably positioning said detection plate to focus said radiation thereon.

3,626,931

VIBRATOR DEVICE FOR APPLICATION OF VIBRATION TO EROTIC PARTS OF FEMALE GENITALS

Bireswar Bysakh, 127, Raja Dinendra Street, Calcutta 4, India

Filed June 26, 1969, Ser. No. 836,899
Claims priority, application Great Britain, July 1, 1968, 31,237/68
Int. Cl. A61h *1/00*
U.S. Cl. 128—32 **5 Claims**



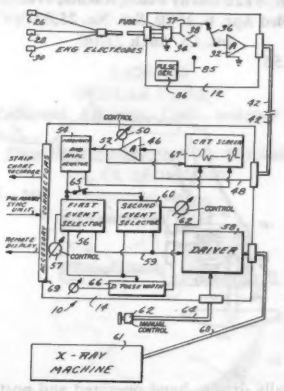
A vibrator device for vibrating the erotic parts of the female genitalia including a human organ-engaging vibratable applicator element generally comprising an outwardly tapered sleeve and an extension for contacting the female erotic parts, and power means for vibrating said element.

3,626,932

EKG SYNCHRONIZED X-RAY DOUBLE PULSE EXPOSURE APPARATUS AND METHOD

Hal C. Becker, New Orleans, La., assignor to Hal C. Becker and Phillip H. Meyers, Parish of Orleans, La.

Filed Oct. 11, 1968, Ser. No. 766,929
Int. Cl. A61f *5/04*
U.S. Cl. 128—2.06 R **11 Claims**



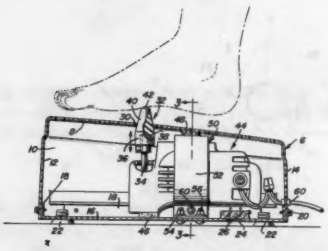
Method and apparatus for producing a double exposure X-ray photograph of a heart at two different points during the

cardiac cycle by causing an X-ray machine to produce an X-ray burst at a first given point in the cycle and then another burst at a second and different point during the cycle. Also, disclosed is a synchronrizer for detecting the R-wave peak of a person, first means for producing a signal activating the machine at a first given adjustable time after the peak, second means for also activating the machine at a second given adjustable time after the peak, and means for producing and displaying a pulse each time the machine is activated having a duration equal to the inherent time delay between activation and burst production in the machine.

3,626,933
FOOT REFLEX RELAXER

Robert M. Pollock, P.O. Box 271, Watsonville, Calif., and Ronald E. Chaddock, 120 S. Pacific Hwy., Talent, Oreg.

Filed Nov. 14, 1969, Ser. No. 876,905
Int. Cl. A61h *7/00*
U.S. Cl. 128—52 **4 Claims**

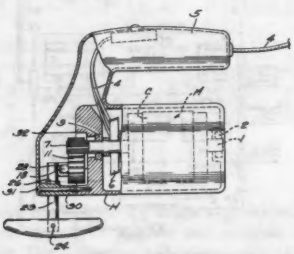


A foot reflex and relaxing machine for use in accordance with theories and underlying principles having to do with reflexology and zone therapy. It comprises a casing having self-contained facilities which break down crystalline deposits in the vital nerve endings. A cushioned ventilated motor is clamped in the casing and removable with the bottom wall. The motor operates a shaft whose upper end actuates an applicator operating through a clearance hole in the corrugated top wall. The pointed but blunt upper end allows the user's foot to "float" thereon in a manner to act on selected nerve endings. The speed of the applicator is controllable by a manually regulable switch.

3,626,934
MASSAGING DEVICE

Ernest R. Andis, 5125 Darby Place, Racine, Wis.

Filed Apr. 6, 1970, Ser. No. 25,827
Int. Cl. A61h *23/00*
U.S. Cl. 128—55 **2 Claims**

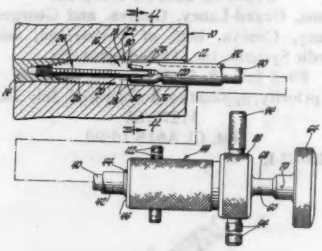


An electrically driven, hand operated and portable device for massaging the body. The device includes a pair of reciprocating patters which are timed so as to alternately pat the body. The drive is directly from the electric motor shaft, through a pair of gears, each of which have an eccentric pin mounted therein and which pins are each connected to their respective reciprocating patter through a follower member. The drive is easily assembled.

3,626,935
SURGICAL NAIL EXTRACTOR

Samuel C. Pollock, Rochester, and Matthew K. Shields, Utica, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 12, 1969, Ser. No. 849,442
Int. Cl. A61f *5/04*
U.S. Cl. 128—83 **4 Claims**

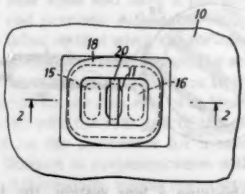


An extractor for removing a broken portion of an intramedullary nail includes an inner rod member and an outer concentric tubular member, each having a pair of axially extending fingers at one end. The fingers are arranged in respective pairs and each finger of such pair includes a pin having a portion extending beyond the inner surface of the finger, with the projecting portions of the pins axially and circumferentially converging with respect to each other. The other end of the inner member is secured to a drum rotatably and slidably received within a housing secured to the other end of the outer member. Fixed handles on the housing have their inner ends extending into an annular groove of the drum to limit axial movement of the drum and inner member relative to the housing and outer member. A manually rotatable handle on the housing has its inner end engaging the wall of an axially extending groove in the drum to rotate the drum and housing and the inner and outer members relative to each other and bring the projecting portions of the pins into clamping engagement with a land of the cruciform cross sectionally shaped nail. The inner member also includes an end anvil which can be used to shift the broken portion of the nail within the medulla to free the nail for easier removal. A handle assembly secured to the drum permits attachment of conventional instruments which apply intermittent axial driving forces to the inner member.

3,626,936
RESUSCITATION MASK

Daniel George John Barker, 11 Dankton Gardens, Sompting, Sussex, England

Filed Oct. 27, 1969, Ser. No. 869,727
Int. Cl. A61m *16/00*
U.S. Cl. 128—145.5 **4 Claims**



A resuscitation device comprising a masking sheet to lay over the mouth of the patient, an opening in the sheet and a

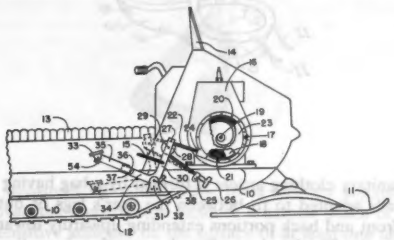
valve device attached to the sheet to permit air to be blown through the opening into the patient's mouth, said opening being closed by the valve device by exhalation from the patient.

3,626,937

APPARATUS

Rolan C. Gjovik, Spring Valley, Wis., assignor to Robert R. Gavic, Spring Valley; C. L. Haylord and C. M. Brye, River Falls, Wis., part interest to each

Filed May 26, 1969, Ser. No. 827,797
Int. Cl. F02n *1/00*
U.S. Cl. 123—185 A **9 Claims**



A starter assist apparatus is taught for use in combination with a recoil-type starter operably connected to an internal combustion engine. Recoil-type starters include a recoil pulley biased in recoil direction, and a cable wrapped about the recoil pulley with the outermost end of the cable extending outwardly for brisk withdrawal to impart a starting impulse for the internal combustion engine.

The arrangement of the new starter assist apparatus is such that, first of all, the cable from the recoil pulley is fastened to a frame element or to a special pivotable lever carrying a bight pulley assembly. When the cable is affixed to the lever, an idler pulley for entraining the cable is fastened to a frame element.

The bight pulley assembly engages a bight of the cable between the fastening point and the recoil pulley wrapping, so that shifting of the bight pulley assembly in response to shifting of the lever draws out cable to impart a starting impulse to the engine. A foot pedal is connected to the lever is spaced relationship from the fulcrum of it so that pivoting is accomplished by foot pressure. Limit stops restrict the range of pivot of the lever so as to reduce wear and tear of the recoil mechanism. Alignment of the elements, or a special guide member, serves to maintain the cable, during withdrawal and recoil of it with respect to the recoil mechanism, in substantially the same plane as the wrapping of that cable about the recoil pulley. This relationship is at least maintained for a sufficient distance beyond the rims of the recoil pulley to prevent abrading draw of the cable laterally over a rim of the recoil pulley.

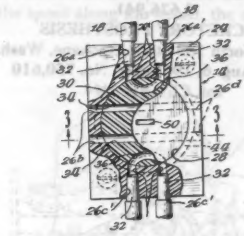
3,626,938

HEMODIALYSIS SHUNT VALVE DEVICE WITH BODY CONNECTING MEANS

Antonio A. Versaci, 1092 St. Jude Drive, Schenectady, N.Y.

Continuation-in-part of application Ser. No. 764,542, Oct. 2, 1968, now abandoned. This application June 30, 1970, Ser. No. 51,202
Int. Cl. A61m *05/00*
U.S. Cl. 128—214 B **7 Claims**

A shunt valve device for connecting an artery and vein to a dialysis machine, such as an artificial kidney or the like, including a shunt valve assembly which has a pair of passages extending therethrough and a valve means for selectively opening and closing the passages. The assembly is mounted on a body member of a person and the passages are connected to the artery and vein. The assembly has means for receiving a pair of conduits from the artificial kidney and holding the conduits in communication with the passages through the assembly so that the valve means can be operated to open the passages and thereby connect the artery



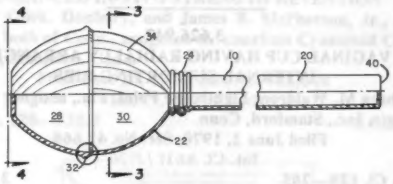
and vein to the artificial kidney and permit the flow of blood therebetween. When the valve means is closed, the flow of blood is shunted back to the body member. A bubble sensor is provided between the artificial kidney and the shunt valve assembly to close the valve means on sensing a bubble in the stream of blood leading from the artificial kidney to the shunt valve assembly.

3,626,939

DISPOSABLE DOUCHE WITH NESTING BELLOWS SECTIONS

Martin S. Maltenfort, 7 Smith Road, Glen Farms, Newark, Del.; Harry M. Sokolic, and Leon Sokolic, both of 428 8th Street, Atlanta, Ga., assignors to Said Harry M. Sokolic and Leon Sokolic, by said Martin S. Maltenfort

Filed Feb. 16, 1970, Ser. No. 11,600
Int. Cl. A61m *1/00, 3/00*
U.S. Cl. 128—232 **3 Claims**



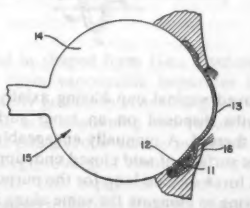
A disposable douche fabricated in a single piece and which can be collapsed into a very small volume and can be carried in a woman's purse.

3,626,940

OCULAR INSERT

Alejandro Zaffaroni, Atherton, Calif., assignor to Alza Corporation

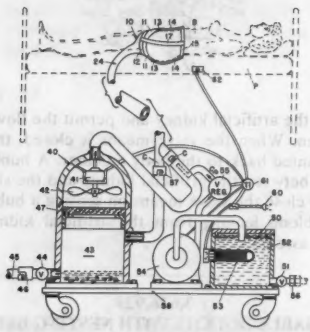
Filed May 2, 1969, Ser. No. 821,468
Int. Cl. A61m *31/00*
U.S. Cl. 128—260 **4 Claims**



Drug dispensing ocular insert for insertion into the cul-de-sac of the conjunctiva between the sclera of the eyeball and

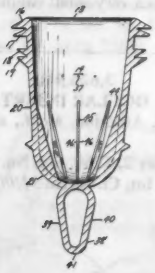
the lid to dispense drug to the eye over a prolonged period of time is adapted for convenient insertion and removal by incorporation of a magnetically attractable substance therein. The ocular insert can be inserted and removed from the cul-de-sac using a magnetic tool.

3,626,941
EXCRETORY PROSTHESIS
Donald D. Webb, North 133 Stone, Spokane, Wash.
Filed Aug. 6, 1968, Ser. No. 750,610
Int. Cl. A61f *5/44*
U.S. Cl. 128—283 **9 Claims**



A combination of a forced air-vacuum producing device and a water supply for cleansing and drying the perineal area of a body covered by a watertight cup having air and water supply means and a waste tube. Electrical energy operates the air-vacuum and water supply and has a manually activated timer to provide the cleansing and drying of the perineum in sequence.

3,626,942
VAGINAL CUP HAVING RADIALLY ARRANGED INTERNAL SUPPORTING RIBS
Barbara M. Waldron, Lighthouse Point, Fla., assignor to Tassette, Inc., Stamford, Conn.
Filed June 2, 1970, Ser. No. 42,668
Int. Cl. A61f *13/20*
U.S. Cl. 128—285 **3 Claims**

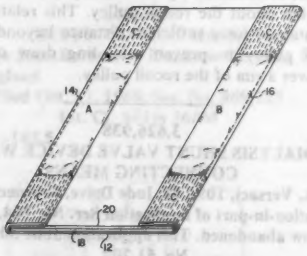


An improved vaginal cup having axially aligned inwardly extending ribs disposed on an inner surface adjacent the closed end thereof. A manually engageable loop is provided on the outer surface of said closed end, application of an axially aligned force on said loop for the purpose of withdrawing the cup serving to elongate the same along its axis, and simultaneously decrease the effective diameter to facilitate such withdrawal.

3,626,943
SANITARY CLOTHING ARTICLE
Gurdon S. Worcester, High St., Gloucester, Mass.
Continuation-in-part of application Ser. No. 842,817, July 8, 1969, which is a continuation-in-part of application Ser. No. 591,725, Nov. 3, 1966, now abandoned. This application Mar. 11, 1970, Ser. No. 18,599
Int. Cl. A61f *13/16*
U.S. Cl. 128—286 **15 Claims**

A sanitary clothing article is formed by a bag having flexible walls adapted to fit between the user's legs or buttocks with front and back portions extending upwardly toward the user's waist. The bag has soft pad means forming a lip opening into the bag and is adapted to fit in a position on and around an excretory organ of the body to hold the bag in direct communication therewith. Means are provided for holding the bag with said opening in said position, thereby to bar excreta from issuing exteriorly of the bag, these means including a belt to be worn on the user's waist, and either split band means cooperating with the lip, or fastener means on portions of the bag cooperating with said belt for supporting the bag by the belt. A check valve of flexible material attached inside the lip opening, or constricting closure means within the lip, are provided for closing the lip opening and confining the contents of the bag after detachment from the body. The flexible walls are made from a material substantially water-impenetrable from the inside, the outside of the walls being water-softenable to permit said walls to substantially disintegrate by placing them in water.

3,626,944
DISPOSABLE ABSORBENT ARTICLE
Charles H. Schaar, Lake Zurich, Ill., assignor to The Kendall Company, Boston, Mass.
Filed May 18, 1970, Ser. No. 38,324
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 **6 Claims**



A disposable absorbent article having a backing comprising a sheet of liquid and air impervious material with one or more sealed pockets, having a volume of air trapped therein, being formed on the periphery of the sheet.

3,626,945

TAB CONSTRUCTION FOR SANITARY NAPKIN

Carolyn R. Mobley, Appleton, Wis., assignor to Kimberly-Clark Corporation, Keenah, Wis.

Filed Mar. 27, 1969, Ser. No. 811,169
Int. Cl. A61f 13/16
U.S. Cl. 128—289 3 Claims

An improved tab construction for a sanitary napkin. The improved tab construction includes a narrow patch of pressure sensitive adhesive on the surface of at least one tab and near the end thereof, and a relatively stiff protective cover strip covering the adhesive strip. The protective cover is longer than the adhesive patch and is positioned on the adhesive so that an unattached portion of the strip extends inwardly toward the center of the napkin. The relatively stiff cover strip is also sufficiently narrow so that it can be used to facilitate threading the tab through a fixture such as the clasp or grip normally used with napkin supporting devices. When the used napkin is to be discarded, it is rolled on itself with the soiled surface on the inside, the protective strip is removed, and the adhesive patch is pressed against the rolled up body of the napkin to hold it in the rolled condition for disposal.

3,626,946

EAR CLEANER

Edwin W. Messey, 246 Millbrook Drive, Willingboro, N.J.

Filed Jan. 12, 1970, Ser. No. 2,070
Int. Cl. A61b 17/22; A47k 7/02; A47l 1/06
U.S. Cl. 128—304 3 Claims

An ear cleaning device including a nonwoven fabric twisted and pressed about a cigar-shaped mandrel to form a member which can be inserted safely into the human ear.

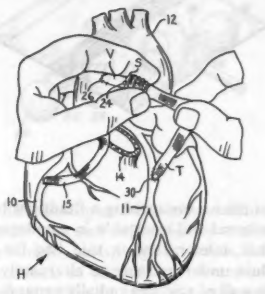
3,626,947

METHOD AND APPARATUS FOR VEIN AND ARTERY REENFORCEMENT

Charles Howard Sparks, 3725 S.E. Martins St., Portland, Oreg.

Filed Feb. 19, 1970, Ser. No. 12,817
Int. Cl. A61b 17/04; A61f 1/24
U.S. Cl. 128—334 R 15 Claims

A novel method and apparatus are provided for applying a textile mesh reenforcing tube on a vein or artery. The mesh tube is gathered on a spool and confined between the end flanges of the spool. After making a severed end of the vein or artery accessible, the spool containing the mesh tube is slipped onto the blood vessel. Then the vessel is anastomosed and blood flow is established through the vessel, expanding the collapsed vessel to normal size. One end of the mesh tube is pulled off one end of the spool and secured on the vessel. By sliding the spool along the vessel, the mesh tube is pulled off the end of the spool and applied progressively to the vessel, the mesh being tensioned sufficiently to contract the tube to fit the vessel. The spool is split longitudinally so that the two halves may be removed from the vessel. The mesh tube subsequently becomes incorporated into the wall of the vessel, making it stronger than a normal artery. Such reenforcement is useful for strengthening an artery in situ and for strengthening a vein graft which is subject to arterial pressure.

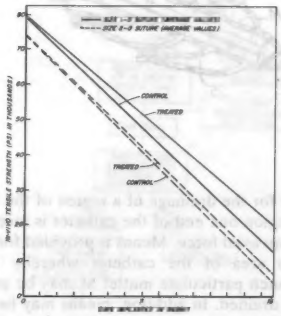


3,626,948

ABSORBABLE POLYGLYCOLIC ACID SUTURE OF ENHANCED IN-VIVO STRENGTH RETENTION

Arthur Glick, Danbury, and James B. McPherson, Jr., Cos Cob, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 23, 1968, Ser. No. 786,049
Int. Cl. A61l 17/00
U.S. Cl. 128—335.5 2 Claims



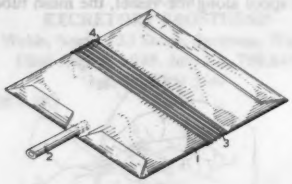
Polyglycolic acid in shaped form (i.e., a suture) which is substantially free from vaporizable impurities is provided which has significantly greater in-vivo strength retention than shaped polyglycolic acid containing said vaporizable impurities. The improved polyglycolic acid is prepared by vacuum heating shaped polyglycolic acid containing vaporizable impurities to vaporize the impurities therefrom, and then removing the vaporized impurities from the polyglycolic acid. An apparatus for conveniently carrying out the above process is also provided.

3,626,949

CERVICAL DILATOR

Wallace B. Shute, 340 McLeod St., Ottawa, Ontario, Canada

Filed Jan. 23, 1969, Ser. No. 793,369
Int. Cl. A61m 29/00; A61b 17/42
U.S. Cl. 128—344 2 Claims



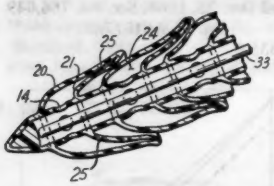
A cervical dilator comprising a fluidtight bag formed from a flexible material and insertable in a collapsed state into the cervical canal, inlet means in said bag for periodically introducing fluid under pressure to alternately inflate said bag whereby the wall of said bag radially expands to directly contact the walls of said canal and to deflate said bag so as to cause dilatation of the cervix and simulate effects of labor contraction, a portion of the wall of said bag intermediate the ends thereof being adapted to be more resistant to radial expansion whereby to form on inflation of said bag a constricted waist portion which accommodates the edges of the cervix.

3,626,950

CATHETER WITH AUGMENTED DRAINAGE MEANS

Rudolf R. Schulte, Santa Barbara, Calif., assignor to Heyer-Schulte Corporation, Santa Barbara, Calif.

Continuation-in-part of application Ser. No. 844,559, July 24, 1969. This application June 19, 1970, Ser. No. 47,657
Int. Cl. A61m 27/00
U.S. Cl. 128—350 R 5 Claims



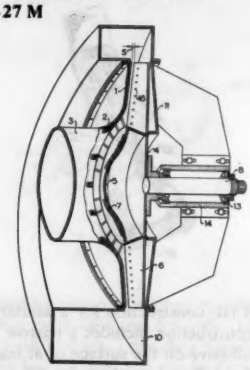
A catheter for the drainage of a region of the human body into which region one end of the catheter is inserted, usually by means of an axial force. Means is provided for augmenting the drainage area of the catheter whereby to minimize clogging by such particulate matter as may be present in the region to be drained. In addition, means may be provided to shroud at least some of the drainage means while the catheter is being thrust into the region. The catheter comprises a pair of flexible fins which surround a catheter tube on each side of a passage through its wall. The passage is an inlet means to the lumen of the tube. These fins are joined to each other at a peripheral junction so as to form a chamber in communication with the passage. A plurality of perforations through at least one of the fins augments the inlet means in the sense of providing an increased total flow channel to the lumen of the tube without requiring enlargement of the passage, which could risk the passage of particulate matter of excessive size.

3,626,951

THRESHING AND SEPARATING APPARATUS FOR COMBINES

Alexander Jan Vogelenzang, Wageningsestraat 28, Andelst, Netherlands

Filed Apr. 1, 1970, Ser. No. 24,707
Claims priority, application Germany, Apr. 3, 1969, Feb. 10, 1970, P 20 05 889.3; P 19 17 333.2
Int. Cl. A01f 12/20
U.S. Cl. 130—27 M 12 Claims



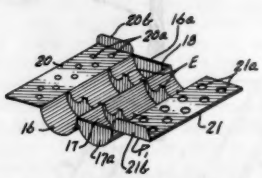
The threshing and separating device comprises a housing having a feed conduit extending from the vicinity of a cutting device and terminating at an issuing end within the housing. A curve merges said issuing end of said conduit with a thresher plate which is fixed within said housing. There are thresher blades on the side of said fixed thresher plate remote from said conduit. A rotary thresher plate is within said housing opposite said fixed thresher plate. Fan blades are fitted on said rotary thresher plate and extend towards but stop short of said fixed thresher plate to leave an annular gap opening into said housing. Lattice bars are concentrically disposed at radial intervals and pass through said blade.

3,626,952

SMOKE FILTER

Karol J. Mysels, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Apr. 21, 1970, Ser. No. 30,488
Int. Cl. A24d 01/04; A24f 07/04, 13/06
U.S. Cl. 131—10.5 9 Claims



A tobacco smoke filter is provided which includes a hollow cylindrical member formed of smoke-impervious material. The member includes a pair of hingedly connected semicylindrical sections and a pair of perforated panels hingedly connected to the semicylindrical sections and disposed therebetween. One of the panels and one of the semicylindrical members cooperate to form a first passageway having an open upstream end and a closed downstream end. The other panel and semicylindrical member cooperate to form a second passageway having a closed upstream end and an open downstream end. The passageways are in communication with one another only through the perforated panels.

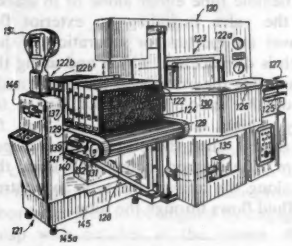
Smoke is adapted to pass through the perforations of the panel defining the first passageway as a plurality of high-velocity jets which impinge against the adjacent surface of the panel defining the second passageway.

3,626,953

APPARATUS FOR WEIGHING CIGARETTES AND SIMILAR ROD-SHAPED ARTICLES

Kurt Korber, Am Pfingstberg 10, Hamburg-Bergedorf, and Hans Sottorf, Juthorskamp 2, Hamburg-Wandsbek, both of Germany

Original application Aug. 22, 1966, Ser. No. 574,245, now abandoned , Continuation of application Ser. No. 285,120, June 3, 1963, now abandoned , Continuation-in-part of application Ser. No. 217,777, Aug. 13, 1962, now abandoned. Divided and this application Mar. 10, 1970, Ser. No. 18,270
Claims priority, application Great Britain, Italy, Germany, Aug. 8, 1962, Aug. 10, 1962, Aug. 11, 1962, 30343/62; 26280/62; K47483
Int. Cl. A24c *05/32*
U.S. Cl. 131—22 **9 Claims**



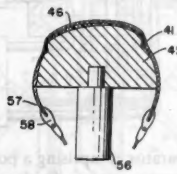
Apparatus for regulating the weight of cigarettes has a weighing scale which weighs trays containing arrays of stacked cigarettes and produces signals serving to control the operation of the trimmer and/or distributor in a cigarette-making machine. The cigarettes are lifted off a conveyor of the machine by a suction head and are transferred into trays in the form of layers by means of a reciprocable pusher. The spatial relationship of cigarettes in the trays is not changed preparatory to or during weighing. The trays descend stepwise during filling with layers of cigarettes.

3,626,954

METHOD OF FORMING HAIRPIECE

Donald W. Ostrom, 19625 W. 7 Mile Road, Detroit, Mich.

Original application May 15, 1967, Ser. No. 649,765, now Patent No. 3,472,246. Divided and this application Apr. 23, 1969, Ser. No. 818,710
Int. Cl. A41g *5/00;* **B29c** *1/02*
U.S. Cl. 132—5 **3 Claims**



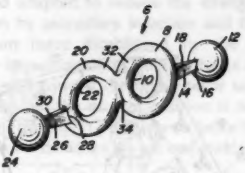
Method of forming a hairpiece which comprises forming a concave cast conforming to the shape of the head, forming a mold from the cast, modifying the surface of the mold to produce a groove, and shaping a foundation element to conform to the mold.

3,626,955

HAIRPIECE-TO-HAIR CONNECTOR AND FASTENER

Phil J. Greenwood, P.O. Box 1062, Decatur, Ill.

Filed Aug. 6, 1970, Ser. No. 61,666
Int. Cl. A45d *8/00*
U.S. Cl. 132—46 R **4 Claims**



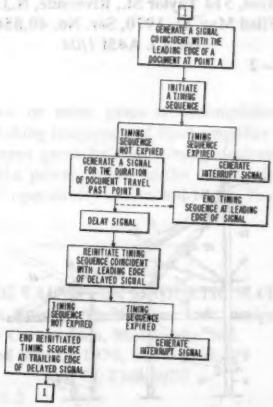
Hairpiece-to-hair linking and fastening means through the medium of which one can expeditiously and reliably join postiches, for example, curls, wiglets, braids, falls, ponytails and the like to a lock of natural hair. It comprises at least one, usually two, ringlike or annular compressibly resilient integrated but severable collars, each collar providing a circular opening across which an end portion of the lock of hair (artificial or natural) is placed, buckled and temporarily anchored by way of an insertable and removable compressibly resilient ball-type fastener. A plastic strap links the ball fastener to the collar.

3,626,956

ITEM TRANSPORT DEVIATION DETECTION DEVICE

Oran A. J. Sauder, Oak Park, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 21, 1970, Ser. No. 65,949
Int. Cl. G08b *21/00*
U.S. Cl. 340—259 **5 Claims**

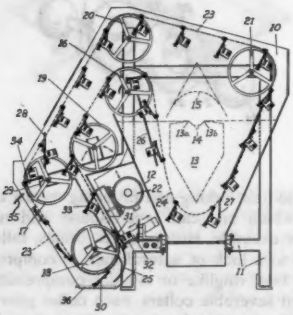

GENERATE A SIGNAL COINCIDENT WITH THE LEADING EDGE OF A DOCUMENT AT POINT A
INITIATE A TIMING SEQUENCE
TIMING SEQUENCE NOT EXPIRED
TIMING SEQUENCE EXPIRED
GENERATE A SIGNAL FOR THE DURATION OF DOCUMENT TRAVEL PAST POINT B
GENERATE INTERRUPT SIGNAL
END TIMING SEQUENCE AT LEADING EDGE OF SIGNAL
DELAY SIGNAL
REINITIATE TIMING SEQUENCE COINCIDENT WITH LEADING EDGE OF DELAYED SIGNAL
TIMING SEQUENCE NOT EXPIRED
TIMING SEQUENCE EXPIRED
END REINITIATED TIMING SEQUENCE AT TRAILING EDGE OF DELAYED SIGNAL
GENERATE INTERRUPT SIGNAL

A device and method for detecting interruptions or deviations of normal item transport in an item transport pathway wherein a signal indicative of an interruption or deviation is generated whenever a transported item takes longer than a predetermined time to be transported between two stations in the pathway, or whenever an item remains longer than a predetermined time at the second of the stations, the two consecutive time conditions being imposed by the same timing element.

3,626,957
AUTOMATIC APPARATUS FOR THE CONTINUOUS DEGREASING OF PADLOCK BODIES AND THE LIKE

Gian Carlo Balducci, Via Conca d'Oro 287, Rome, Italy

Filed June 23, 1970, Ser. No. 49,104
Claims priority, application Italy, June 28, 1969, 38293 A/69
Int. Cl. B08b *3/08, 11/02*
U.S. Cl. 134—104 15 Claims

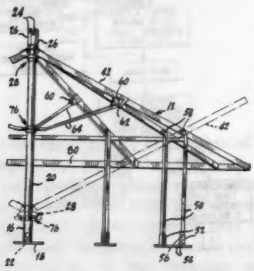


An apparatus for the continuous automatic degreasing of padlock bodies during the course of their production, and for the expulsion of shavings of brass from their holes. The apparatus comprises a tank of suitable configuration containing a degreasing liquid, in which the padlock are immersed by carrying bars and moved along an endless chain entrained around rotatable gearwheel, one of which is a driving gearwheel. A plurality of guide rails for regulating the orientation of said bars are provided in the tank.

3,626,958
EXHIBITION PORTABLE TENT

Anthony L. Ross, 514 Taylor St., Riverside, N.J.

Filed May 27, 1970, Ser. No. 40,856
Int. Cl. A45f *1/04*
U.S. Cl. 135—2 9 Claims



A tent of the umbrella type, designed to be quickly erected or knocked down by a small crew working primarily at ground level. A collar is pivotally connectable, at or near ground level, to a series of radial beams. The beams pivot on uprights so that when the collar is moved upwardly along a standard or center pole, as for example, by a winch operated by a crewman on the ground, the beams rock on the uprights and are elevated to inclined canopy-supporting positions.

3,626,959
INTRAVENOUS FLOW CONTROL

Louis S. Santomieri, Benicia, Calif., assignor to Deseret Pharmaceutical Company, Inc., Sandy, Utah

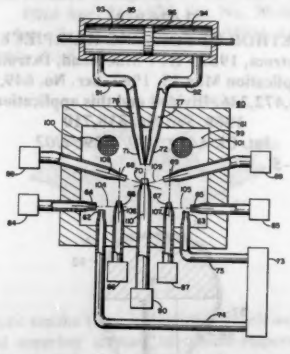
Filed Feb. 4, 1970, Ser. No. 8,580
Int. Cl. F03b *1/00;* F16k *31/58*
U.S. Cl. 137—1 5 Claims

A valve for controlling the flow of intravenous fluid through a flexible tube either alone or in association with a reservoir, the valve including an exterior flexible sleeve disposed over an aperture or separation in the tube and a spool which is displaceable within and along the axis of the tube by squeezing the exterior of the sleeve and/or tube near one end of the spool. The spool has a tortuous fluid passageway which is obstructed so that fluid flow is prevented except when the obstruction is disposed opposite the aperture. The method includes adjusting the position of the spool along the axis of the tube to control the rate at which the fluid flows through the tube.

3,626,960
METHOD AND APPARATUS FOR DIVERTING FLUID FLOW

John G. Rupert, St. Anthony Village, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 7, 1970, Ser. No. 1,107
Int. Cl. F15c *1/14*
U.S. Cl. 137—13 12 Claims



Fluid amplifier apparatus comprising a power nozzle for issuing a deflectable power stream, fluid receiver means for receiving a variable portion of the power stream, and control means for issuing a control stream in a variable transverse direction relative to the power stream so that a variable portion of the control stream intercepts the power stream, thereby varying the received portion thereof. The control means may comprise a series of nozzles, each adapted to issue a fluid stream, a variable portion of which, depending

on the deflection thereof, transversely impinges on the next succeeding fluid stream causing its deflection. Single-ended and differential output embodiments are disclosed.

3,626,961

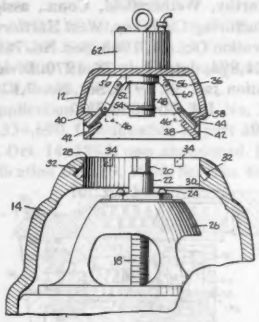
MAGNETIC HYDRANT LOCK

Carlos Manuel Quinones, 8420 Miramar Parkway, Miramar, Fla.

Filed Mar. 11, 1970, Ser. No. 18,657

Int. Cl. E03b 9/10; F16k 35/06

U.S. Cl. 137—296 **9 Claims**



A hydrant lock comprising an open-crown bonnet in combination with a closure cap to be seated thereon to enclose the bonnet, with the opening wall and cap base provided with spaced angled bores adapted to be aligned by engagement of teeth on the cap with notches in the crown. A central cylinder integral with the undersurface of the cap top slidably supports a sleeve having extensions pivotally linked to rods disposed in the cap bores adapted to partially enter the crown bores to interlock cap and crown. The cap, cylinder, links and rods are of nonmagnetic material and the sleeve of magnetic material whereby magnetic force applied to the top of the cap raises the sleeve along the cylinder, drawing the rods out of the crown bores to release the cap.

3,626,962

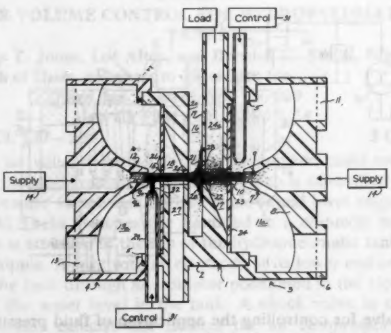
FLUIDIC LOGIC DEVICE

Louis D. Atkinson, New Berlin, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Jan. 26, 1970, Ser. No. 5,653

Int. Cl. F15c 1/20

U.S. Cl. 137—81.5 **15 Claims**



A fluidic flip-flop device of a set-reset type includes fluidic amplification. The impact position of a pair of opposed main streams occurs within a reference chamber between a pair of output chambers having output orifices in the adjacent reference walls. The walls are flat planar surfaces such that with the impact position immediately adjacent the related orifice, the impacting emitted stream flow locks to the adjacent wall as a result of fluid entrainment phenomena. This establishes a stable position. The main streams pass through the output chambers which have isolating orifices in spaced aligned relation to the output orifices. Signal nozzles to the opposite sides of the output chambers are connected to a fluidic source and adapted to reduce the strength of the related main stream by secondary injection and thereby overcome the lock-on force established by the entrainment phenomena. The impact position then switches rapidly away from the locked wall toward the opposite or second output orifice and wall. When the impact position is adjacent such second wall, the entrainment phenomena locks the stream to the second wall and establishes the second stable position.

3,626,963

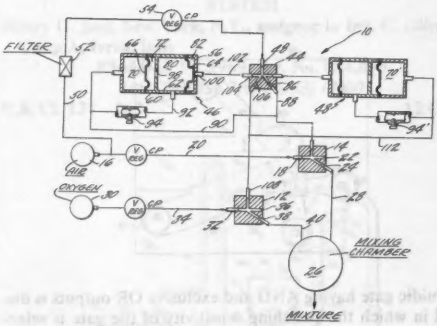
FLUID MIXER UTILIZING FLUIDIC TIMER ACTUATING FLUIDIC AMPLIFIER VALVES

Hermann Ziermann, Cheshire, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Feb. 4, 1970, Ser. No. 8,569

Int. Cl. F15c 1/12

U.S. Cl. 137—81.5 **13 Claims**



Mixing of two or more gases is accomplished by controlling the switching frequency of fluid amplifier valves metering the different gases by fluid timing devices. A fluidic timer switches the power stream to the output channels of a fluidic amplifier operatively connected to the fluid amplifier valves.

3,626,964

REGULATING VALVE FOR MAGNETIC MATERIALS

Harvey G. Van Fossen, Mishawaka, Ind., assignor to The Wheelabrator Corporation, Mishawaka, Ind.

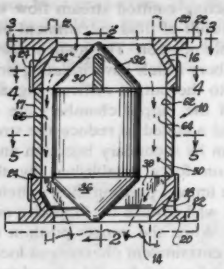
Filed Sept. 3, 1970, Ser. No. 69,299

Int. Cl. F16k 9/00

U.S. Cl. 137—81.5 **8 Claims**

A valve for regulating the flow of materials which are made up of a substantial portion of magnetic particles, the valve being characterized by improved flow rate control means. The valve includes an outer member and an assembly consisting of a permanent magnet and an electrical coil, this assembly providing a core member with a flow through passage being provided by spaces defined between the core member and the interior wall of the outer member. Means are provided for energizing the coil and for varying the input to the coil to vary the influence of the magnet on the particles and thereby regulate the flow of the material through the valve. The spaces defined between the pole pieces and the in-

terior wall vary between minimum and maximum dimensions, and the energization of the electrical coil is controlled



whereby the flow rate can be suitably maintained at desired levels and readily changed between different flow rates.

3,626,965

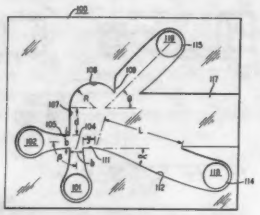
FLUIDIC AND/OR GATE

Anthony J. Healey, State College, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Jan. 9, 1970, Ser. No. 1,638

Int. Cl. F15c *1/10*

U.S. Cl. 137—81.5 **17 Claims**



A fluidic gate having AND and exclusive OR outputs is disclosed in which the switching sensitivity of the gate is selectively determined by simple changes in the interior geometry of the gate.

3,626,966

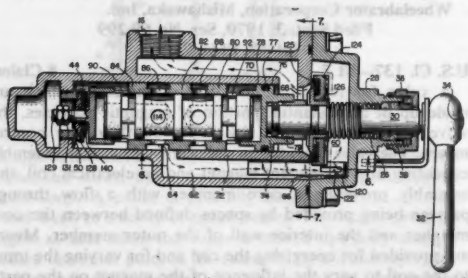
STEAM AND WATER MIXER

Liudas Vanagas, Chicago, Ill., assignor to Powers Regulator Company, Skokie, Ill.

Filed June 19, 1969, Ser. No. 834,661

Int. Cl. G05d *11/00*

U.S. Cl. 137—100 **4 Claims**



A steam and water mixing valve to produce tempered water in which a control valve regulates the movement of steam and water through separate passages in said mixing valve to a common mixing chamber. A deflector element is placed in the steam passage at a point where the steam enters the mixing chamber and contacts the water to ensure a direct and more efficient transfer of heat energy to the water from the steam, thereby resulting in quieter operation of the mixing valve. Also, the inlet to the steam passage is shut off before the outlet of the mixing chamber is. By shutting off in this order, the chances of obtaining live steam from the outlet at the time the mixer is being closed is eliminated.

3,626,967

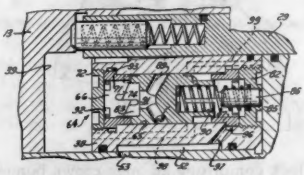
DISTRIBUTING AIR VALVE UNIT

Donald J. McCarthy, Wethersfield, Conn., assignor to The Jacobs Manufacturing Company, West Hartford, Conn.

Original application Oct. 21, 1968, Ser. No. 769,141, now Patent No. 3,521,894, dated July 28, 1970. Divided and this application Jan. 30, 1970, Ser. No. 7,120

Int. Cl. G05d *7/00*

U.S. Cl. 137—106 **6 Claims**



A pneumatically operable air-distributing valve unit designed for incorporation in the body of a collet-actuating piston of an air chuck. It is selectively operable to cause live source air to be applied to one or the other ends of the piston chamber. It includes a pair of end cams between which a porting valve is reciprocable. As the valve is reciprocated from one position to another, it cooperates with one or the other of the cams to cause the valve to be indexed angularly 45° from its last position. In this action, air feed and exhaust ports are caused to be brought alternately into register with ports leading to one or the other ends of the piston chamber or are caused to be shut off from both ends of the chamber.

3,626,968

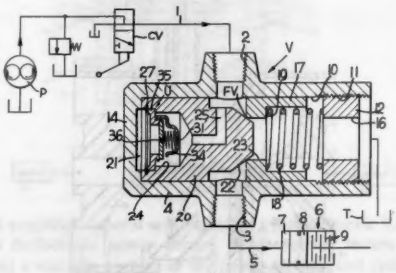
PRESSURE RISE DELAY VALVE

Peter D. Hancock, Racine, Wis., assignor to Twin Disc, Incorporated, Racine, Wis.

Filed Sept. 8, 1970, Ser. No. 70,357

Int. Cl. F16k *17/04*

U.S. Cl. 137—115 **15 Claims**



A valve for controlling the application of fluid pressure to an actuating device and which provides a brief dumping of a portion of the pressure fluid and consequently a gradual rise in pressure. The valve includes two parts which move in the same direction, that is, the piston which moves first in one

direction when initial pressure is applied, and a popper which then moves in the same direction. The piston and poppet are abuttable to form a fluid valve which regulates the dumping of pressure fluid. The poppet includes an orifice through which fluid flows to the rear of the poppet when pressure is applied to the valve, to consequently cause the poppet to move in the same direction as the piston. The poppet also includes a check valve for providing a quick return of the poppet and piston a reset position. The orifice and check valve can be combined together in the poppet as a unit, and because they are both located in the time control poppet, no extra fluid lines are required to the poppet.

3,626,969

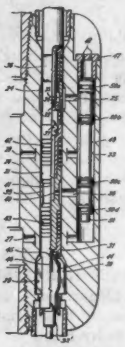
METHOD AND APPARATUS FOR INSTALLING AND REMOVING GAS LIFT VALVES IN A WELL

Henry U. Garrett, Houston, Tex., assignor to Brown Oil Tools, Inc., Houston, Tex.

Original application May 1, 1964, Ser. No. 379,064, now Patent No. 3,334,690, Continuation-in-part of application Ser. No. 315,976, Oct. 14, 1963, now abandoned. Divided and this application Dec. 19, 1966, Ser. No. 603,015

Int. Cl. F04f *1/08*

U.S. Cl. 137—155 **7 Claims**



This patent discloses a system for landing tools such as gas lift valves in a well, and particularly by doing so utilizing hydraulic fluids. The patent also discloses equipment to carry out landing of tools hydraulically. These tools include mandrels, gas lift valves, control valves, motors, latching devices, and other structures.

3,626,970

AIR VOLUME CONTROL FOR HYDROPNEUMATIC TANKS

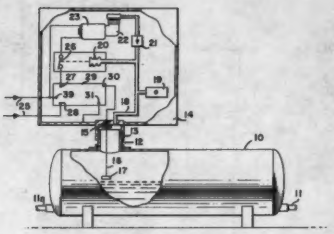
Phillip T. Jones, Los Altos, and Dresden G. Smith, San Jose, both of Calif., assignors to Aqua-Mec Inc.

Filed Jan. 2, 1970, Ser. No. 109

Int. Cl. F04f *1/06;* **B67d** *5/54*

U.S. Cl. 137—209 **3 Claims**

An air volume control for hydropneumatic tanks employing a motor-driven air compressor which is controlled by an air pressure switch and an electronic liquid level responsive switch. These switches are mounted in a common housing which is attached to the top of the hydropneumatic tank by a pipe nipple. A wire with an electrode at its lower end extends into the tank through an insulator positioned in the nipple to sense the water level in the tank. A check valve in the air compressor exhaust line isolates the air compressor from tank pressure when the compressor is not pumping and a safety relief valve connected to the air pressure line insures against overpressurization of the tank by the air compressor in the event the pressure switch fails to open or if for some other reason the air compressor is caused to run when the preset pressure is exceeded. The air pressure switch and electronic liquid level control switch are mounted as a unit and the motor-driven air compressor may be included in this unit or a separate motor-driven air compressor may be provided. This control may be mounted either on the top of the



hydropneumatic tank or on a side of the tank at the water line, in which case an aspirating electrode is substituted for the electrode wire. A part of the aspirating electrode insulator is adapted to flex when the pressure in the tank increases or decreases so that minerals deposited thereon break off as rapidly as they form.

3,626,971

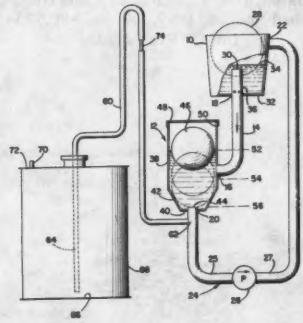
APPARATUS FOR ADDING LIQUID TO A LIQUID FLOW SYSTEM

Henry G. Joel, New York, N.Y., assignor to Ing. C. Olivetti & C.S.p.A, Ivrea, Italy

Filed Dec. 11, 1969, Ser. No. 884,095

Int. Cl. E03b *7/07;* **E03j** *11/00*

U.S. Cl. 137—263 **12 Claims**



Apparatus for automatically adding a liquid to a liquid flow system to maintain the proper quantity and composition of the liquid in the liquid flow system. The liquid is added to the flow system by means of a valve which senses the quantity of liquid in the flow system and actuates a fluid circuit to automatically provide the necessary quantity of liquid to be added.

3,626,972

SOLUBLE GRANULE FEEDERS

Walter C. Lorenzen, Hacienda Heights, Calif., assignor to Anzen Products, Inc., Arcadia, Calif.

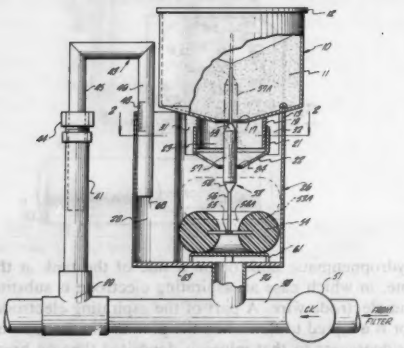
Continuation-in-part of application Ser. No. 809,605, Mar. 21, 1969, now abandoned. This application Sept. 18, 1970, Ser. No. 73,564

Int. Cl. E03c *1/046*

U.S. Cl. 137—268 **8 Claims**

A tank through which a proportion of return line liquid from a pool is bypassed when the pool pump is on receives

soluble granules from an adjustable metering cup depending from a granule supply bin connecting to the tank. A valving cylinder responsive to a float in the tank alternately opens the bin to the metering cup or the cup to the tank in response



to the on-off cycling of the pool pump. Flow through the tank is from the pool water circulation line bypass into the tank, through the tank to a return line independent of or downstream of the pump. A check valve intervenes between the tank and the pump.

3,626,973

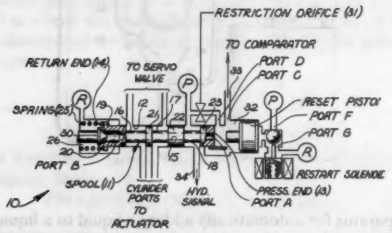
IMPROVED ON-OFF FLOW CONTROL VALVE

Richard K. Mason, 17425 Ludlow, Granada Hills, Calif.

Filed Nov. 28, 1969, Ser. No. 880,773

Int. Cl. F16k *17/08*

U.S. Cl. 137—460 **6 Claims**



A slide valve having first and second limit positions for the control of fluid under pressure therethrough by either permitting the fluid to flow or blocking the fluid from flowing. The slide valve is maintained in one position through the application of fluid under pressure to an end area thereof and is translated from that position to the other position by application of force from a spring thereto. The pressure acting upon the end area of the slide valve during normal conditions, overcomes the spring force. Upon relief of the pressure, the spring commences movement of the slide valve. This slide valve is ported from the one end where pressure is applied to the opposite end which is connected to exhaust, or system return, to latch the slide valve in its other position and to provide rapid translation thereof from its one limit position to the other limit position.

3,626,974

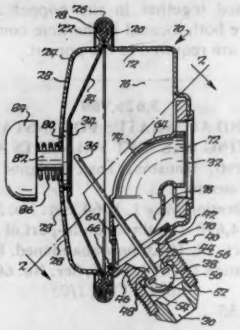
DEMAND REGULATOR

John B. Garrison, Akron, N.Y., assignor to A-T-O Inc., Cleveland, Ohio

Filed Aug. 12, 1969, Ser. No. 849,331

Int. Cl. A62b *7/00*

U.S. Cl. 137—484.2 **6 Claims**



A demand regulator chamber closed by a flexible diaphragm exposed on the opposite side to ambient pressure has an outlet leading to a user and an inlet communicating with a pressurized breathing fluid source. A valve actuated by the flexible diaphragm and interposed in the inlet controls admission of breathing fluid to the chamber. A conductor in the chamber confines and conducts breathing fluid from the inlet through the chamber at high velocity to the outlet in a controlled manner assisting the user in opening the valve.

3,626,975

PRESSURE RELIEF VALVE

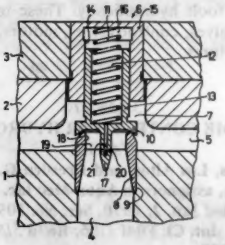
Gerhard Bobst, Oensingen, and Kurt Christiansen, Oberbuchsiten, both of Switzerland, assignors to Von Roll AG, Gerlafingen, Switzerland

Filed Sept. 9, 1969, Ser. No. 856,270

Claims priority, application Switzerland, Nov. 8, 1968, 16712/68

Int. Cl. F16k *31/38*

U.S. Cl. 137—494 **2 Claims**



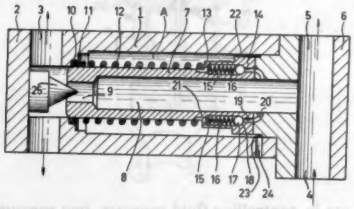
A novel relief valve is disclosed of the type including a spring-loaded valve plate or disc and a valve seat. The valve disc is constructed so as to include a cylindrical guide on the discharge side thereof, the cylindrical guide and valve disc forming a piston enclosed within a cylindrical cavity in which the valve spring is inserted. The cylindrical cavity communicates with the valve seat opening by means of a bore opening into the facing side of the valve disc. In this manner, pressure that is present in the valve seat opening is transferred into the cylindrical cavity thus creating a control pressure differential related to the difference in areas between the valve seat and the piston formed. The spring thus need be

dimensioned only for a partial area of the valve seat opening. The construction provides the advantage that the valve disc stroke-blowoff or discharge quantity characteristic is such that the seating pressure can be varied to any desirable extent in dependence upon the stroke.

3,626,976
PRESSURE TIME DELAY DEVICE

Hillebrand Johannes Josephus Kraakman, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 10, 1969, Ser. No. 856,645
Claims priority, application Netherlands, Sept. 18, 1968, 6813310
Int. Cl. F16k *21/10*
U.S. Cl. 137—508 2 Claims

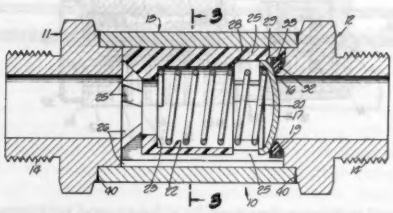


A device for delaying the pressure buildup in a fluid path in which the fluid is used for performing effective work. The device has a cylinder within a housing through which a duct communicates at one end with the path of fluid flow and a valve is arranged at the other end for closing the duct to a communication with an outlet port. When the pressure in the fluid path begins to build up, the fluid acts on the cylinder to move it in an axial direction so as to close the valve. The device also has ducts for communicating with a space surrounding the cylinder and pressure also acts on the cylinder in the opposite direction along with a spring so that the closing of the valve occurs slowly to thereby delay the buildup of pressure in the fluid path.

3,626,977
COMBINATION CHECK AND PRESSURE RELIEF VALVE

James H. Riley, Fullerton, and Mathias Plotkin, Huntington Beach, both of Calif., assignors to Circle Seal Corporation, Anaheim, Calif.

Filed Jan. 21, 1970, Ser. No. 4,683
Int. Cl. F16k *15/02*
U.S. Cl. 137—516.25 14 Claims

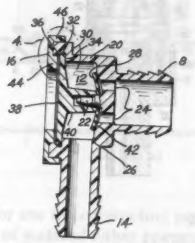


A combination check and pressure relief valve utilizing a lightweight poppet valve member held closed by a calibrated spring and supplemented by a floating self-aligning resilient O-ring seal held against dilation by an encircling channel-shaped retainer ring. The poppet and O-ring units are held captive in a one-piece cage permanently assembled between the surrounding valve housing components by welded seams, the cage being contoured to provide separate stops for the poppet and for the O-ring retainer unit.

3,626,978
CHECK VALVE

Herman M. Hoekstra, South Bend, Ind., assignor to The Bendix Corporation

Filed Apr. 27, 1970, Ser. No. 32,017
Int. Cl. F16k *15/14*
U.S. Cl. 137—525.3 7 Claims

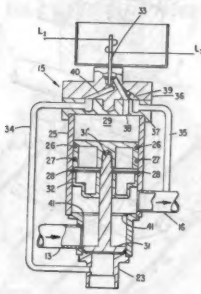


A support member preventing extrusion of a cap member from an opening in the housing of a check valve.

3,626,979
FLUID COMPRESSION SYSTEM CONTROL

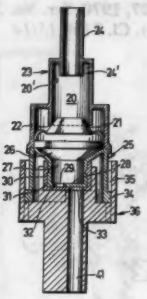
Richard S. Abell, Cazenovia, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Jan. 28, 1970, Ser. No. 6,621
Int. Cl. F17d *1/02*
U.S. Cl. 137—608 3 Claims



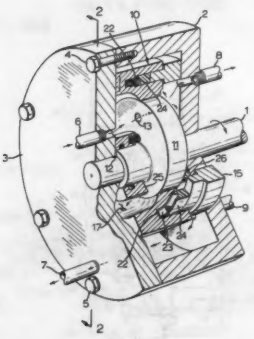
An unloading valve for controlling the capacity of a compressor comprising a housing defining a bore, an inlet to said housing connected to the discharge side of a compressor, a first outlet from said housing connected to the suction side of said compressor, and a second outlet from said housing connected to the discharge manifold of the compressor. Disposed in the bore is a piston assembly and poppet operable in response to changes of pressure in the bore. The piston and poppet move as a result of changes of pressure in the bore, created by the bore being selectively communicated with the side of the compressor and with the discharge side of the compressor. Movement of the piston assembly and poppet selectively communicates the inlet of said valve with either the suction side of the compressor when reduced capacity is required or with the discharge manifold when rated capacity is required.

3,626,980
BACTERIA BARRIER DEVICE
Jan Axel Svensson, Bredbackavag 7, Bjarred, Sweden
Filed Dec. 8, 1969, Ser. No. 882,882
Claims priority, application Sweden, Dec. 13, 1968, 17090/68
Int. Cl. A61f 5/44
U.S. Cl. 137—614.2 1 Claim



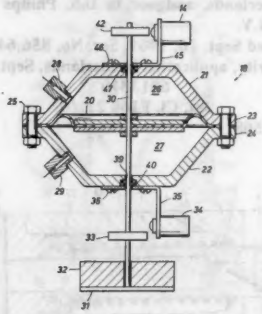
A device for body fluid inlet to a receptacle from the body which device includes means providing a barrier to the reverse movement of bacteria from the receptacle to the body.

3,626,981
ROTARY SLIDE VALVE
Olav Bauer-Nilsen, Norheim 5500, Haugesund, Norway
Filed Oct. 19, 1970, Ser. No. 81,743
Int. Cl. F16k 11/02
U.S. Cl. 137—625.21 5 Claims



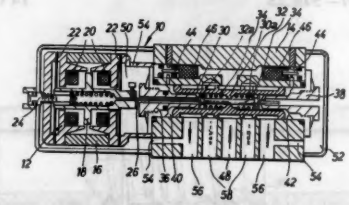
This invention relates to a valving arrangement for a hydraulic power transducer of the type which has cylinders and pistons located radially of a crankshaft. The valving arrangement comprises a hollow cylindraceous rotating slide valve which is driven eccentrically about a central point in a valve chamber by the crankshaft of the power transducer so that the slide valve rotates exactly in synchronism therewith. The slide valve chamber is provided with connecting passages for conducting the hydraulic fluid to and fro between the working chambers of the power transducer. Provision is made to have the slide valve bear with suitable bearing force against a pair of opposed substantially parallel walls by making the slide valve from two cooperating cylindraceous pieces. A chamber is provided between the two cylindraceous pieces which is arranged to be fed with high-pressure hydraulic fluid to cause the two valve pieces apart against the opposing walls of the valve chamber no matter which direction the power transducer is rotating.

3,626,982
FLUIDIC CONTROL DEVICE
Thomas F. McDuffie, 11926 Taylor-Crest, Houston, Tex., and Neal G. Smith, 143 Ravenhead, Houston, Tex.
Filed Mar. 9, 1970, Ser. No. 17,602
Int. Cl. F16k 11/02
U.S. Cl. 137—625.61 7 Claims



For use in controlling fluid pressure, two pressure sources, one being connected with the pressure to be controlled and the other connected with a known pressure, the two pressures being applied to the opposite sides of a relatively large diaphragm which deflects in response to pressure variations, there being a thin rodlike member secured to the diaphragm and extending therefrom, the thin rodlike member carrying a pair of deflectors in proximity of jets from fluidic devices which note the presence or absence thereof, the fluidic devices being connected with a control system for operation in response to movement of the diaphragm.

3,626,983
SERVO VALVE
Ronald Bernard Walters, Wembley, and John Anthony Gordon Hammond, Portsmouth, both of England, assignors to Sperry Rand Limited, London, England
Filed Dec. 22, 1969, Ser. No. 887,396
Claims priority, application Great Britain, Dec. 24, 1968, 61,263/68
Int. Cl. F16k 11/07; F15b 5/00
U.S. Cl. 137—625.64 7 Claims



Servo valve in which movement of a flow controlling element is effected through a flapper located and movable within the flow controlling element. Compression springs also located within the flow controlling element serve to interconnect the flow controlling element and the flapper. The flow controlling device is slidable directly within a bore in the valve body.

3,626,984

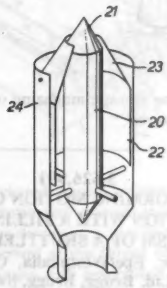
VENTING ARRANGEMENT FOR STORAGE TANKS

Will Pratt, Kenley, and Geoffrey Joseph Grocott, Maidstone, both of England, assignors to The British Petroleum Company Limited, London, England

Original application Oct. 8, 1968, Ser. No. 765,910, now Patent No. 3,557,740, dated Jan. 26, 1971. Divided and this application June 25, 1970, Ser. No. 49,720

Int. Cl. F15d 1/00

U.S. Cl. 138—46 3 Claims



Petroleum storage tanks or the cargo tanks of a tank ship have an upwardly directed minimum velocity escape valve in the vent line or lines. During filling this ensures that no flammable concentration of petroleum vapors forms below the valve, e.g. at the deck level of a tank ship.

A suitable valve has a tapered sleeve which cooperates with a pointed core. The sleeve lifts to provide a larger annular opening to prevent too high-pressure drop at high mass flow rates and falls to reduce the opening to keep a high velocity at lower mass flow rates.

3,626,985

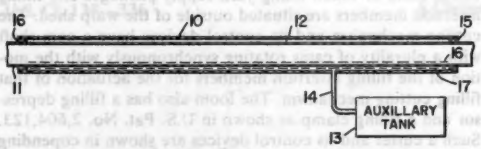
SELF-EMPTYING HOSE

Lennart G. Erickson, 2075 Pioneer Court, San Mateo, Calif., and Max C. Eastman, San Anselmo, Calif., assignors to said Erikson, by said Eastman

Filed Nov. 18, 1968, Ser. No. 776,501

Int. Cl. F16l 9/18

U.S. Cl. 138—115 18 Claims



A self-emptying hose capable of discharging residual liquid in the hose after positive flow through the hose has been terminated. The discharge is accomplished by air contained in a pocket formed between an inner hose and an outer hose. When water is flowed through the inner hose under sufficient pressure, the air in the pocket is compressed and the inner hose is fully opened. When water flow is terminated and the pressure drops, the air in the pocket collapses the inner hose and squeezes out residual water.

3,626,986

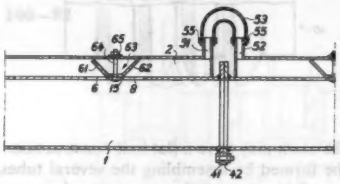
PIPELINE CONSTRUCTION FOR PNEUMATIC AND HYDRAULIC CONVEYANCE OF SOLID MATERIAL

Hermann Rapp, Aarburg, and Walter Allenspach, Niederuzwil, both of Switzerland, assignors to Gebruder Buhler AG, Uzwill, Switzerland

Continuation-in-part of application Ser. No. 646,401, June 15, 1967, now Patent No. 3,524,478, dated Aug. 18, 1970. This application Sept. 19, 1969, Ser. No. 859,539

Int. Cl. G05d 11/00

U.S. Cl. 138—111 10 Claims



Pipe sections, for use in constructing pipelines for conveying solid particles of material either pneumatically or hydraulically, are formed by a main conduit and a branch conduit. At least a portion of the branch conduit is made up of tubular members separate from the main conduit. Openings are provided in the main conduit and branch conduit for interconnecting their flow passageways and a web section is located within the branch conduit for directing the flow of material between the two passageways.

3,626,987

COAXIAL PIPE SYSTEM WITH THERMAL INSULATION

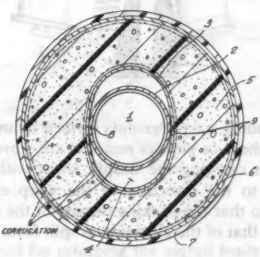
Herbert Bittner, am Heidekamp, Germany, assignor to Kabel- und Metallwerke Aktiengesellschaft, Hannover, Postfach, Germany

Filed Sept. 29, 1969, Ser. No. 861,983

Claims priority, application Germany, Oct. 3, 1969, P 18 00 863.4

Int. Cl. F16l 9/18, 11/12

U.S. Cl. 138—114 9 Claims



A pipe system is disclosed in which there is an inner, an outer, and an intermediate pipe, the latter having elliptical cross section for conduction of heating or cooling medium around the inner pipe.

3,626,988

UNBONDED CLOTH REINFORCED BELLOWS AND METHOD OF MANUFACTURE

Edward J. Chu, Parsippany, N.J., assignor to Resistoflex Corporation, Roseland, N.J.

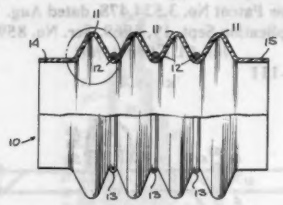
Filed Nov. 12, 1969, Ser. No. 875,789

Int. Cl. F16l 11/00

U.S. Cl. 138—121 10 Claims

The wall of a chemically resistant bellows is formed from a loosely constructed cloth tube (preferably metallic) sur-

rounding but not bonded to at least an inner tube of a substantially inelastic plastic material such as polytetrafluoroethylene resin. A second resin tube may be disposed over the cloth tube. Substantially nonexpandable rings are disposed externally within the valleys of the corrugations. The cloth may have a flat knit construction. The bellows can be formed by assembling the several tubes, adding the nonexpandable rings, and compressing the assembly axially in a suitable mold while the interior is filled with a medium under pressure.



3,626,989

WEAVING METHOD AND APPARATUS

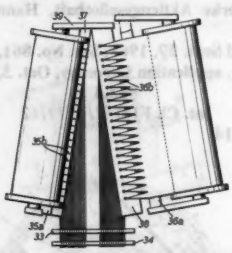
Peter Erich Julius Held, London, England, assignor to Alberton Limited, London, England

Filed Dec. 1, 1969, Ser. No. 881,133

Claims priority, application Great Britain, Dec. 4, 1968, 57,561/68

Int. Cl. D03d *41/00, 49/00*

U.S. Cl. 139—11 **12 Claims**



Webs including warp elements formed by multiply splitting an elongate sheet os plastics material are woven by disposing a warp beam carrying the unsplit sheet with its axis at an acute angle to the direction of the warp elements in the woven web so that the packing density of the elements in the web exceeds that of the elements as split from the sheet.

3,626,990

METHOD AND APPARATUS FOR INTERMITTENTLY FEEDING MEASURED LENGTHS OF WEFT THREAD FROM A SUPPLY BOBBIN TO AN INJECTOR FOR INJECTION INTO A STORAGE-TYPE SHUTTLE

Adolf Linka, Kaiserstrasse 91, 7417 Pfullingen, Germany

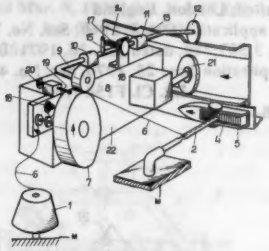
Filed Sept. 16, 1969, Ser. No. 858,455

Claims priority, application Germany, Sept. 20, 1968, P 17 85 416.9

Int. Cl. D03d *47/34*

U.S. Cl. 139—13 **10 Claims**

The thread is guided over a rotating drum, preferably of conical surface, turning in synchronism with the movement of the shuttle; a presser roller is resiliently urged to press the thread against the drum surface, the presser roller being lifted off engagement with the drum surface (and thus permitting the thread to remain stationary) by a cam follower engaging a cam track on the loom, so that synchronous injection of picks into the storage magazine of a shuttle, and shuttle movement is ensured.



3,626,991

SELVAGE-FORMING MOTION OPERABLE IN CONJUNCTION WITH A FILLING-CUTTING MECHANISM OF A SHUTTLELESS LOOM

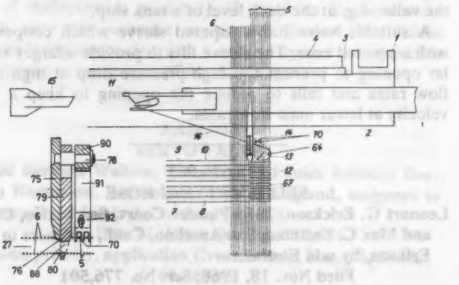
Franz Backenecker, Epe/Westphalia, Germany, assignor to George Fischer Ltd. Brugg, Brugg, Switzerland

Filed Jan. 20, 1970, Ser. No. 4,362

Claims priority, application Switzerland, Jan. 23, 1969, 967/69

Int. Cl. D03d *47/40*

U.S. Cl. 139—122 **9 Claims**



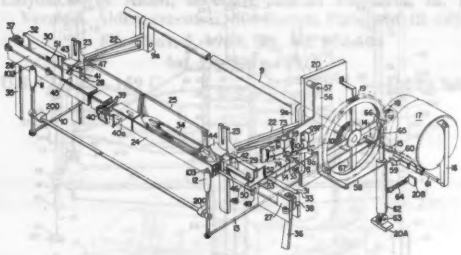
This invention relates to a selvage-forming motion operable in conjunction with a filling-cutting mechanism of a shuttleless loom in which filling yarn supply packages and filling insertion members are situated outside of the warp shed. The cutting mechanism and its control devices have a cam shaft with a plurality of cams rotating synchronously with the motion of the filling insertion members for the actuation of that filling cutting mechanism. The loom also has a filling depressor and a filling clamp as shown in U.S. Pat. No. 2,604,123. Such a cutter and its control devices are shown in copending U.S Pat. application Ser. No. 766,446, filed Oct. 10, 1968. In that application, it was one purpose of the invention to weave a fabric with nonfast selvages. According to the present invention, it is desired to weave a fabric with a fast edge or edges and the cutter has been modified to function within the fabric a short distance from the edge and to cut the filling a few millimeters from that edge thereby to leave the short cut end of filling in the shed as a tucked end. These ends do in many instances snap out of the shed before it can close on them, or at least, become displaced to leave a loop at the cloth edge. To obviate this, the cutter is provided with added functional parts which hold the tucked ends in place until they are locked by the shed.

3,626,992

PROTECTION AND CONTROL MEANS FOR FLY-SHUTTLE LOOMS

Edgar P. Turner, Watchung, N.J., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Nov. 19, 1965, Ser. No. 508,745
Int. Cl. D03d *51/02, 51/44, 51/36*
U.S. Cl. 139—336 27 Claims



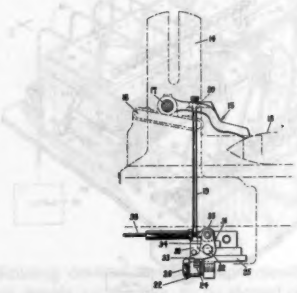
The invention disclosed herein relates in general to improvements in automatic and manual stopping of fly shuttle looms. The invention discloses a mechanical means for detecting late shuttle arrival at the throat of the shuttle-receiving box and brake means with associated linkage for quickly stopping the loom shocklessly. This system is operated by the linkage automatically tripping a quick-disconnect element unless a sensor in the path of the fly shuttle is displaced at the proper time. It also discloses linkage associated with a filler break detector of the same type as, and in combination with, the late shuttle detection system, to quickly and shocklessly stop the loom upon thread breakage. Also disclosed is a hydraulic and spring-operated energy absorption apparatus to aid the loom's normal braking system when a stop is desired. By means of a novel linkage, this apparatus is caused to engage the loom drive wheel upon either a manual or automatic stop signal being given. Additionally, the disclosure teaches a system for ensuring that on manual stops the loom will always stop at the same position in its cycle. This system is disclosed as either using the linkage of the first two stopping means or a similar system. There is also disclosed an electrical system for providing controlled loom stoppage in the event of an electrical power failure.

3,626,993

LOOM STOPPING AND PROTECTOR MECHANISM

Rocco H. Mucciarone, Franklin, and Joseph M. Budzyna, East Douglas, both of Mass., assignors to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Dec. 8, 1965, Ser. No. 512,287
Int. Cl. D03d *51/02, 51/44*
U.S. Cl. 139—336 5 Claims



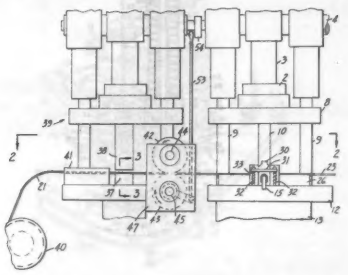
A loom stopping and protector mechanism for fly-shuttle looms having a unitary clutch-brake motor and shuttle sensing members pivotably mounted within each of the shuttle boxes and effective through forward motion of the lay to release the loom's operating lever to permit the latter to activate the brake of said motor upon indication of an improperly positioned shuttle in either of said shuttle boxes.

3,626,994

METHOD OF FORMING CLIPS

Karl A. Klenz, Oakland, Calif., assignor to Rheem Manufacturing Company, New York, N.Y.

Filed May 18, 1970, Ser. No. 37,990
Int. Cl. B21f *45/22*
U.S. Cl. 140—82 2 Claims



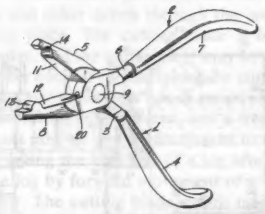
A wire clip of noncircular cross section is formed from a length of wire by swaging the wire to the desired noncircular cross-sectional shape. The wire is fed intermittently toward a wire-cutting and clip-forming device and the swaging step is carried out while the wire is stationary and the clip is being formed.

3,626,995

CRIMPING TOOL

Bernard J. Keenan, Jr., West Chester, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Filed Nov. 14, 1969, Ser. No. 876,870
Int. Cl. B21f *1/00*
U.S. Cl. 140—106 6 Claims



A plierlike tool for crimping the pigtail leads of electronic components has a protuberance in the active face of one plier jaw and a matching groove in the active face of the other plier jaw. A hole is drilled through the pivotal connection between the two jaws, to accommodate a long pigtail lead being crimped.

3,626,996

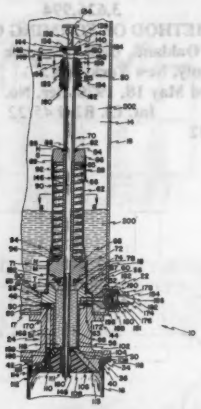
CONTAINER-FILLING METHOD AND APPARATUS

Joseph P. Bingham, and Terry E. Nish, both of Salt Lake City, Utah, assignors to Servi-Tech Inc., Salt Lake City, Utah

Filed Apr. 8, 1970, Ser. No. 26,476
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—5 10 Claims

Method and apparatus for filling a container or can with a carbonated liquid or beverage wherein: the can is indexed

into position beneath the filling apparatus; carbon dioxide gas is introduced into the can; carbonated liquid beverage flows into and fills the can; and the foam at the top of the liquid in the can, developed during filling, is evacuated through snift passageways which are isolated from the liquid-



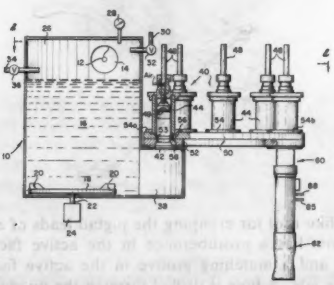
filling passageway. The lower portion of the liquid-filling passageway adjacent the spreader is small in volume and has a screen disposed immediately above the spreader to confine the foam for ease of removal whereby the sequential filling and capping of cans is significantly accelerated.

3,626,997

METHOD OF AN APPARATUS FOR PACKAGING A FOOD PRODUCT

William C. Whitaker, Richmond, and George D. Bryan, Jr., Mechanicsville, both of Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Apr. 27, 1970, Ser. No. 32,194
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—9 **14 Claims**



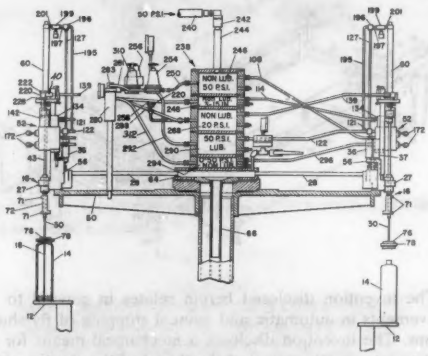
A method of and apparatus for packaging a food product wherein a slurry of the food product and a brine solution is used to facilitate the advance of the food product. The slurry is collected in a vessel from which a portion of the food product is removed under pressure and delivered to a bag or pouch-forming apparatus. The brine solution is removed from the food product while it is being delivered to the pouch-forming apparatus but is reunited with a brine solution in the pouch-forming apparatus. The latter also includes means for preventing the food product from being entrapped in the seal area of the pouch which would prevent a satisfactory seal from being formed.

3,626,998

CONTAINER-FILLING MACHINE

William H. Trusselle, Braintree, Mass., assignor to Pneumatic Scale Corporation, Braintree, Mass.

Filed Apr. 18, 1969, Ser. No. 817,501
Int. Cl. B65b *3/26*
U.S. Cl. 141—198 **14 Claims**



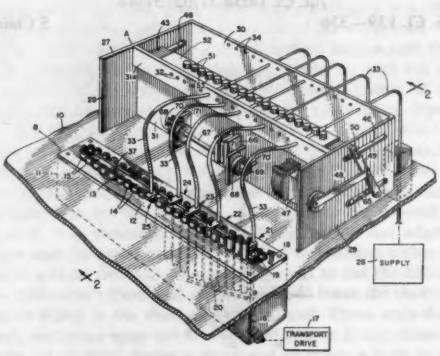
A container-filling machine of the gravity or pressure type having control means for automatically starting and stopping the filling operation and which is particularly adapted for filling bottles with liquids subject to foaming. The filling operation consists in first depositing a small amount of liquid into the container at slow speed so as to inhibit foaming; simultaneously lowering the filling nozzle into the container until the nozzle outlet is covered by the initially deposited liquid; and then introducing the liquid at a more rapid rate. Releasing the liquid into the container while the outlet from the nozzle is disposed below the surface of the liquid reduces agitation and turbulence to a minimum and thus prevents the formation of foam. This expedient may also be employed for liquids which do not have a tendency to foam, and in either event affords a faster filling operation than can be obtained by conventional filling procedures.

3,626,999

FLUID DELIVERY APPARATUS

Alan R. Jones, Miami, Fla., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Mar. 12, 1969, Ser. No. 806,493
Int. Cl. B65b *3/32*
U.S. Cl. 141—243 **4 Claims**



A fluid handling device especially suited for use in automatic chemical analysis which delivers measured amounts of

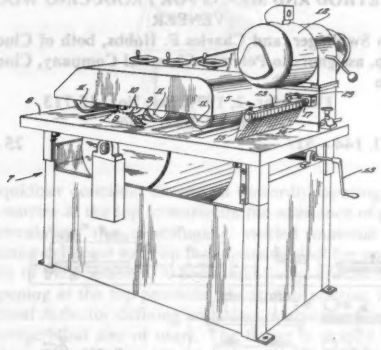
selected fluids to intermittently advancing sample tubes at selected stopping stations and then, after selected intervals, withdraws predetermined amounts of the mixed fluids from said tubes for photometric analysis.

3,627,000

COMBINATION FLYBACK CURTAIN AND SNUBBER FOR RIPSAW MACHINES AND THE LIKE

Lloyd George Alden, deceased, late of Plainfield, Ill. (by Verna R. Alden, executrix, 804 Barlett, Plainfield, Ill. 60544)

Filed Nov. 5, 1969, Ser. No. 874,104
Int. Cl. B27g *19/02*
U.S. Cl. 143—159 C **11 Claims**



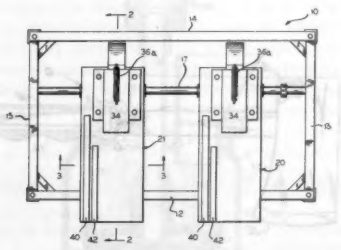
Downwardly biased relatively sharp-tipped fingers are pivotally mounted in a curtain row across the infeed end portion of a powered ripsaw machine table, with upper end shoulders on the fingers normally separably engaging a stop bar but permitting forward passage swinging of those fingers of which the tips are contacted by a piece of lumber during infeed.

3,627,001

ROUTING DEVICE WITH STATIONARY ROUTING TOOL

Kenneth N. White, Orland Park, Ill., assignor to Harold E. Meyer, c/o White-Meyer Wood Products, Inc., Orland Park, Ill., a part interest

Filed Dec. 31, 1969, Ser. No. 889,631
Int. Cl. B27f *5/02*
U.S. Cl. 144—27 **5 Claims**



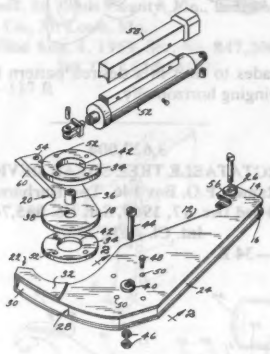
Routing devices that can conveniently and quickly cause door panels, or the like, to be slotted on a mass production basis for purposes of associating hinges therewith that require slots formed in the panels. The routing tools thereof are held stationary and the panels are fed toward the routing tools.

3,627,002

TIMBER SHEAR CONSTRUCTIONS

Oscar T. Fulghum, Jr., Wadley, Ga., assignor to Fulghum Enterprises, Inc., Wadley, Ga.

Filed Aug. 3, 1970, Ser. No. 64,149
Int. Cl. A01g *23/02*
U.S. Cl. 144—34 E **21 Claims**



An improved shear construction is provided for cutting and felling trees and for maintaining a shear in tight engagement with a tree while a cutting operation is taking place. The shear is of a type having a pivotally mounted blade. An improved mounting arrangement for the blade provides a pair of bearing plate elements for supporting and mounting a cutting blade for pivotal movement about an offset axis relative to a jaw carried by the main body of the shear. The main body of the shear includes a jaw towards which a cutting edge of the cutting blade may advance for effecting a cutting action. The jaw may be provided with an anvil, or alternatively, may be constructed to permit an unobstructed passage of chips, bark and other debris through the jaw as a cutting action is taking place. The cutting blade is operated by a hydraulic cylinder, and the entire shear may be mounted on a vehicle. The main body of the shear may be constructed from a pair of spaced plate members which receive and support a base end of the cutting blade means, and a tree pushing and handling element may be provided adjacent to the jaw of the main body for lifting the butt end of a log after it is cut and for pushing the log by forward movement of a vehicle which carries the shear. The cutting blade means may be provided with a cutting edge which is either plain or serrated. Cutting teeth of the serrated embodiment of a cutting blade means are formed with leading edges which function as cutting edges and with trailing edges which do not cut so that a tree is retained within the confines of the shear while a cutting operation is taking place.

3,627,003

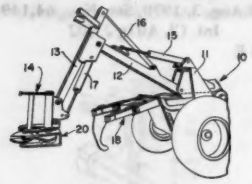
TREE SHEAR

Kenneth Quentin Kessler, Bettendorf, Iowa, and Earl Crittion Davis, Jr., Moline, Ill., assignors to Deere & Company, Moline, Ill.

Filed June 20, 1968, Ser. No. 738,590
Int. Cl. A01g *23/02*
U.S. Cl. 144—34 E **6 Claims**

A tree-shearing device that includes a horizontal frame, a pair of levers supported to swing horizontally on the frame toward and away from one another, a pair of blades sup-

ported to swing horizontally on the respective levers, and cam means on the main frame that engage the blades that



cause the blades to shift in a desired pattern in response to the levers swinging horizontally.

3,627,004

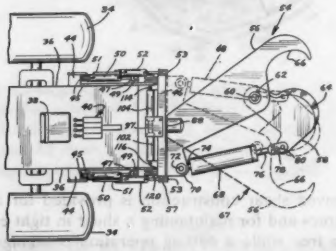
ROTATABLE TREE SHEAR DEVICE

Kenneth J. Ramey, P.O. Box 146, Two Harbors, Minn.

Filed Dec. 17, 1969, Ser. No. 885,742

Int. Cl. A01g *23/02*

U.S. Cl. 144—34 E **11 Claims**



A tree shear device adapted to attach to the frame of a vehicle is disclosed. The shear includes a shear frame, an anvil member, a shear blade pivotally mounted on and carried by the anvil member to form a tree-cutting portion in association with the anvil member, a controlled rotatable drive mounted on the shear frame and attached to the tree-cutting portion for supporting it and for rotating it to a desired angle, and a device attached between the shear blade and the anvil for for causing the blade to pivot relative to the anvil to cut a tree positioned therebetween. Since the tree-cutting portion can be rotated and since the edge of the blade is specifically designed to cause the tree being cut to always fall to one side, as respects the blade and anvil, the tree being cut may be caused to fall to one side or the other by rotating the tree-cutting portion through an angle of 180°.

3,627,005

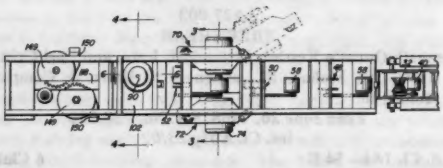
MACHINE FOR CUTTING PEELER CORES OR LOGS INTO STUDS AND CHIPS

David L. Morton, 4503 Federal Way, Boise, Idaho, and Adrian L. Landers, 570 Courthouse St., Many, La.

Filed Apr. 15, 1969, Ser. No. 816,355

Int. Cl. B27c *9/04*; **B27l** *11/02*

U.S. Cl. 144—39 **9 Claims**



A core-handling apparatus for supporting a core or log for horizontal longitudinal advancement along a path past various tool heads operably to cut the core or log into a plurality of studs and chips. The core and log-handling apparatus includes structure operable to move cores or logs along a predetermined path, independent of any displacement of the core or log other than longitudinally of the path, and the tool heads are disposed along the intended path of movement of the associated cores and logs and operable to sequentially chip material from the opposite sides of the cores or logs to form parallel opposite side planar faces on the cores or logs, chip material from the upper and lower portions of the cores or logs to form planar parallel upper and lower surfaces on the cores or logs, and form at least one horizontal kerf through the cores or logs after the latter have been shaped.

3,627,006

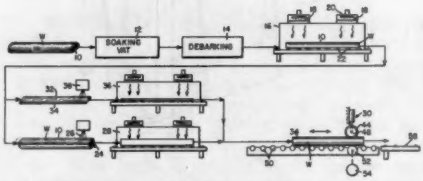
METHOD AND MEANS FOR PRODUCING WOOD VENEER

Melvin Swillinger, and Charles F. Hobbs, both of Cincinnati, Ohio, assignors to Polymer Chemical Company, Cincinnati, Ohio

Filed Mar. 2, 1970, Ser. No. 15,713

Int. Cl. B27l *5/06*

U.S. Cl. 144—327 **25 Claims**



The veneer-cutting procedure involves the new step of supporting the workpiece for slicing for forcing a strong backing board to transfer inherent stress to an inherent warp of the workpiece, so that the backing board takes the warp out of the workpiece as the thickness of the workpiece approaches zero value during slicing.

3,627,007

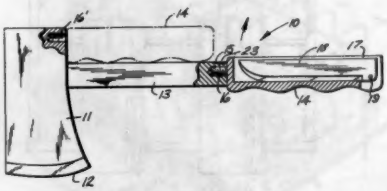
AX

Alfred H. Rieffer, 1236 W. 13th #20, Merced, Calif.

Filed Nov. 22, 1968, Ser. No. 778,128

Int. Cl. B25g *1/06*; **B26b** *23/00*

U.S. Cl. 145—2 R **3 Claims**



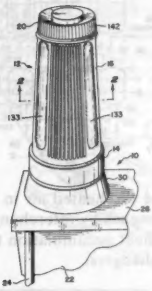
A handtool in the form of an ax having a removable handle that may be screwed or otherwise fastened to the axhead which will render the device to be adapted for compactness. This tool carries various tool elements within the handle in order that it may be used for a variety of purposes.

3,627,008

SAFETY BLENDER JAR

Maurice P. Samuelian, West Hartford, Conn., assignor to Dynamics Corporation of America

Filed Nov. 12, 1969, Ser. No. 875,998
Int. Cl. B02c *18/12*; A47j *43/042*
U.S. Cl. 146—68 A 13 Claims



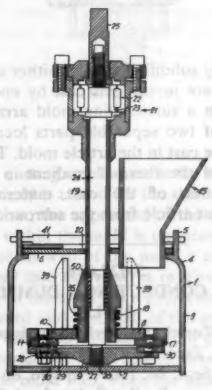
A liquidizer container having an upwardly tapering shape that is narrow at the top to maximize the assistance of gravity in recirculating the centrifugally swirled material while minimizing deflector sizes on the container wall for optimum capacity of the container. A horizontal flange around the access opening at the top provides an external pouring lip and an internal deflector defining an access opening smaller than the average hand size of users. The flange is shaped to obstruct insertion of a hand but is tapered radially inside the container to facilitate withdrawal of a hand that may have been inserted. The bottom opening receives a cutter-carrying closure that is removable for the full access cleaning of cutters and container.

3,627,009

CHOPPING MACHINES

Ronald Hugh Alexander, Ayr, Scotland, assignor to National Research Development Corporation, London, England

Filed Apr. 21, 1969, Ser. No. 817,933
Claims priority, application Great Britain, Apr. 24, 1968, 19,432/68
Int. Cl. B02c *18/12*
U.S. Cl. 146—68 7 Claims



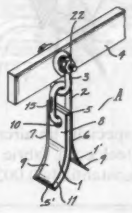
A chopping machine comprising a stationary member and a rotary member each of which carries a plurality of cutting edges each of which has an edge of a copying lathe tool of triangular-section prism shape. The rotary and stationary members are spring-biassed towards one another and impeller blades are provided on the rotary member to cause flow of liquid vehicle and material to be chopped within the container in which the rotary and stationary members are disposed. Guide vanes are provided for placing a constraint on the direction of flow of the liquid vehicle and material to be chopped.

3,627,010

FLAIL ASSEMBLY

Robert C. Rueff, St. Louis County, Mo., assignor to Nixdorff-Krein Mfg. Co., St. Louis, Mo.

Filed Aug. 4, 1969, Ser. No. 847,200
Int. Cl. A01d *55/22*
U.S. Cl. 146—117 R 8 Claims



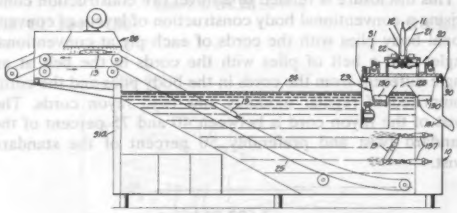
A flail assembly for use with shredding machines, comprising a clevis member engaging the mounting bar of the machine, an endless chain link suspended from said clevis member, and at least one knife blade supported dependingly from said chain link. Said clevis incorporates legs having hook portions at their free ends; with the transverse distance between said hook portions being substantially equivalent to the cross section of the stock forming said link, which latter is provided with a cross-sectionally reduced portion to allow for facile assembly and disassembly of the clevis with respect to the said link.

3,627,011

METHOD AND APPARATUS FOR PEELING BANANAS

John E. Pond, Granada Hills, Calif., assignor to Universal City Studios, Inc., Universal City, Calif.

Filed June 29, 1970, Ser. No. 50,739
Int. Cl. A23n *7/00*
U.S. Cl. 146—223 43 Claims

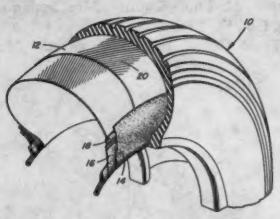


An apparatus for removing the peel from the fruit of a banana includes means to guide and position the banana after it is fed into the apparatus and peeling means which cause a plurality of grip members to engage and grip longitudinal segments of the peel and, as the fruit of the banana moves past the peeling means, the grip members pull each segment from the fruit and continue to pull until the peel is completely removed. The removed peel segments are then released from the grip members and the whole fruit is passed on for further processing.

3,627,012
PNEUMATIC TIRES

Henry R. Fletcher, deceased, late of Birmingham, England (by Agnes Marion Fletcher, executrix), assignor to Dunlop Holdings Limited

Filed July 16, 1969, Ser. No. 20,266
Claims priority, application Great Britain, July 16, 1968, 33,745/68
Int. Cl. B60c 9/16
U.S. Cl. 152—357 11 Claims

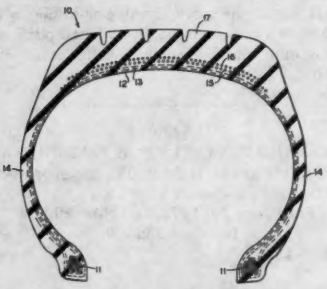


A pneumatic tire, especially an aircraft tire, having at least one carcass ply of steel cord fabric comprising individual wires of diameter of substantially 0.003 of an inch or less.

3,627,013
PNEUMATIC TIRE

David William Chase, Stow, and Robert Charles Purcell, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Aug. 8, 1969, Ser. No. 848,613
Int. Cl. B60c 9/18
U.S. Cl. 152—361 4 Claims



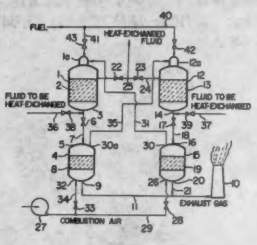
This disclosure is related to a novel tire construction comprising a conventional body construction of layers of conventional body plies with the cords of each ply at conventional angles and a belt of plies with the cords in the belt at an angle different from the cords in the body plies and the cords comprised of regular modulus, low twist rayon cords. The twist of the rayon cord is between 40 and 75 percent of the standard twist and preferably 50 percent of the standard twist.

3,627,014
HEAT-EXCHANGER SYSTEM

Hideo Nishikawa, Akashi; Akihiro Kawaguchi, Akashi, and Koichi Washimi, Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to and Mitsubishi Jyukogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Feb. 17, 1970, Ser. No. 12,072
Claims priority, application Japan, Feb. 20, 1969, 44/12444
Int. Cl. F23f 15/02
U.S. Cl. 165—4 4 Claims

Heat exchanger system comprises a plurality of heat exchangers, each being provided with heating means, and preheaters mutually paired and connected by connecting tubes having control valves. The preheaters are heated by exhaust gas generated in the heating means and sent from the

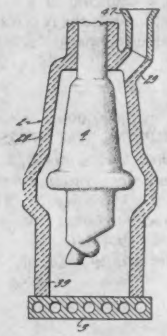


heat exchangers, and the heated air in each preheater is fed back to the heating means by interchanging operations of the control valves from heat accumulation to heat release or vice versa in the heat exchangers.

3,627,015
COCOON CASTING OF DIRECTIONALLY SOLIDIFIED ARTICLES

Anthony F. Giamei, Middletown; Merton F. Hornbecker, Woodbury, and Bruce E. Terkelsen, Cheshire, all of Conn., assignors to Hughes Aircraft Corporation, East Hartford, Conn.

Filed June 1, 1970, Ser. No. 42,423
Int. Cl. B22d 25/06
U.S. Cl. 164—60 9 Claims



Unidirectionally solidified articles either columnar grained or single crystal are investment cast by enclosing the mold for the articles in a surrounding mold arranged to make a control casting of two separable parts located on opposite sides of the article cast in the article mold. This permits more precise control of the thermal gradient in the article mold during solidification of the cast material and provides removal of the cast article from the surrounding material.

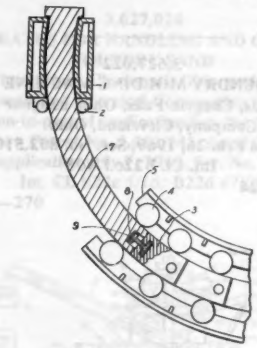
3,627,016
METHOD FOR CONDUCTING A DUMMY BAR INTO A MOLD

Max Burkhardt, Zurich, Switzerland, assignor to Concast Aktiengesellschaft, Zurich, Switzerland

Filed Sept. 26, 1969, Ser. No. 861,295
Claims priority, application Switzerland, Sept. 30, 1968, 14606/68
Int. Cl. B22d 11/08
U.S. Cl. 164—82 1 Claim

A dummy bar is conducted up into an open-ended continuous casting mold by a guide element which is lowered down

through the mold, connected to a dummy bar below the mold and moved up until the dummy bar is received in the mold.



The guide element is then disconnected from the dummy bar and lifted up out of the mold.

3,627,017

DUMMY BAR HEAD FOR CONTINUOUS CASTING AND METHOD OF USING SAME

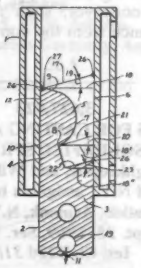
Bernhard Knell; Armin Thalmann, both of Zurich, Switzerland, and Klaus Brock, Dusseldorf, Germany, assignors to Concast Aktiengesellschaft, Zurich, Switzerland and Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed Apr. 29, 1969, Ser. No. 820,048

Claims priority, application Switzerland, Germany, Apr. 29, 1968, May 21, 1968, 6359/68; P 17 58 379.8

Int. Cl. B22d *11/08*

U.S. Cl. 164—82 **15 Claims**



In continuously casting steel wherein the bottom end of an open-ended chill mold is closed for the start of casting by the head of a dummy bar, the upper end of the dummy bar head which is received within the mold is undercut on one side to form with an adjacent wall of the mold a cavity into which molten steel poured into the mold is received and solidifies. The undercut side of the head has a projection to extend into the cavity and toward said first wall of the mold. The face of the upper end of the head in back of the projection has at least a part of its surface bearing against the mold wall which is opposite said first mold wall, when the head is in the mold. The projection and the cavity are shaped to enable the upper end of the head to be separated from the steel that has solidified in contact therewith in the mold, after the head and said solidified steel are withdrawn from the mold, by transverse circular movement of the lower end of the head away from the portion of the steel that solidified in the cavity.

3,627,018

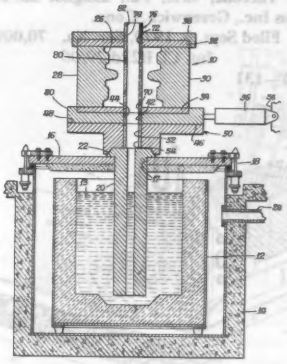
METHOD FOR PRODUCING CASTINGS IN A PERMANENT MOLD

Richard C. Costello, West Chicago; Albert J. Jean, Forest Park, and William J. Kucera, Elmhurst, all of Ill., assignors to Amsted Industries Incorporated, Chicago, Ill.

Filed Sept. 23, 1969, Ser. No. 860,294

Int. Cl. B22d *15/00*

U.S. Cl. 164—113 **2 Claims**



Hollow castings are produced in a permanent mold having a hollow refractory core disposed in the interior of the mold. The core has a number of small sprues through which the casting cavity of the mold is filled, and excess metal is retained within the core to feed shrinkage within the interior of the casting. After the surface of the casting has chilled, the mold is separated from the casting to prevent binding, but the core is retained therein until the casting has completely solidified. The core and solidified metal therein are then removed.

3,627,019

METHOD OF CASTING A CONTINUOUS SERIES OF SLUGS

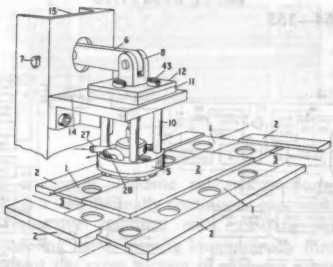
Robert Edward Hitchcock, Hartfordshire, and Alan Younger, Buckinghamshire, both of England, assignors to R. T. Z. Metals Limited, London, England

Filed Oct. 3, 1968, Ser. No. 764,905

Claims priority, application Great Britain, Oct. 6, 1967, Oct. 6, 1967, Oct. 6, 1967, Oct. 6, 1967, 45,907/67; 45,908/67; 45,909/67; 45,910/67

Int. Cl. B22d *33/04*

U.S. Cl. 164—130 **1 Claim**



Making castings, such as slugs, in low and medium melting point metals and alloys, by vacuum casting, wherein the metal is introduced through an entry port in a bottom plate into a mold cavity defined by a mold plate, the bottom plate and a top plate, the top plate being so constructed as to allow

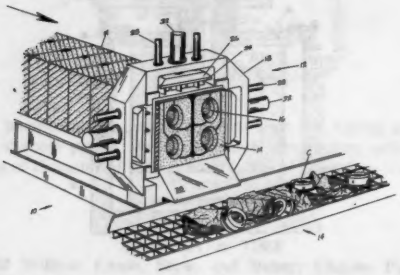
evacuation of the mold cavity, the metal being caused to solidify progressively towards the entry port in the bottom plate, characterized in that after solidification the mold plate is moved transversely to shear the casting from any solidified metal in the entry port without any movement of the bottom plate.

3,627,020

MOLD-BREAKING DEVICE

Russell W. Taccone, Erie, Pa., assignor to Bangor Punta Operations Inc., Greenwich, Conn.

Filed Sept. 8, 1970, Ser. No. 70,000
Int. Cl. B22d *29/00*
U.S. Cl. 164—131 **11 Claims**



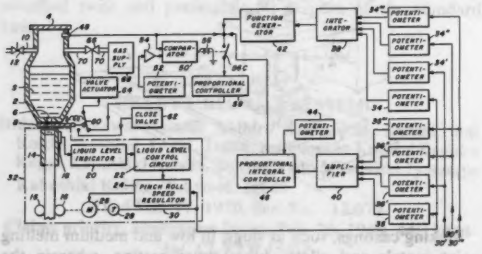
In a molding operation, sand molds containing castings are conveyed by the cooling conveyor to a mold-breaking station for breaking the molds and releasing the castings. The rectangularly shaped molds and the castings therein are conveyed in a vertical position into an opening with a frame. Fluid actuated cylinders mounting mold-breaking tools are carried by the frame on each of the four sides of the mold. The tools are cruciform in cross section. Upon actuation of the cylinders, the tools simultaneously break into and fracture the sand mold on each side thereof. Further advancement of the conveyor carrying the molds and castings, pushes the fractured mold and castings from the frame onto a shakeout conveyor to complete the breakup of the sand mold whereby the castings can be removed.

3,627,021

CONTINUOUS CASTING CONTROL SYSTEM USING VACUUM VESSEL PRESSURIZATION

Ronald G. Schultz, Bay Village, Ohio, and Stevan N. Vojnovic, Monroeville Borough, Pa., assignors to United States Steel Corporation

Filed July 25, 1969, Ser. No. 844,949
Int. Cl. B22d *11/10*
U.S. Cl. 164—155 **9 Claims**



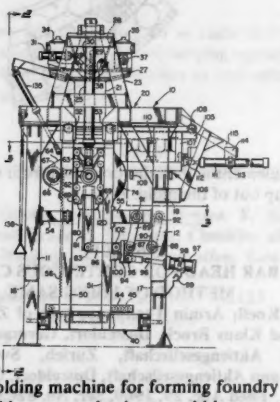
A repressurization control system provides a uniform flow from a batch vacuum degassing vessel for continuous casting. A function generator provides a vessel pressure signal which maintains a uniform effective metal head during the cast and is controlled by the amount of metal cast. System sluggishness is overcome by feedback controls correcting the signal for actual vessel pressure and for departure from desired casting speed.

3,627,022

FOUNDRY MOLDING MACHINE

Robert G. Shields, Chagrin Falls, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

Filed Feb. 26, 1969, Ser. No. 802,510
Int. Cl. B22c *17/08*
U.S. Cl. 164—224 **11 Claims**



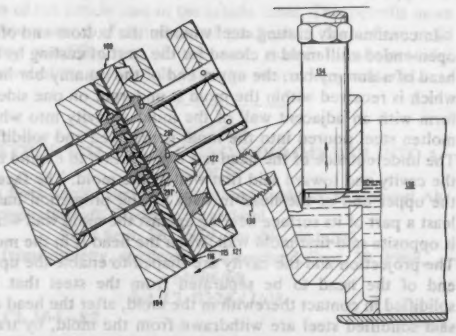
A foundry molding machine for forming foundry sand articles such as molds or cores having a mold box mounted on a trunnion cradle for vertical movement, such cradle including an extending guide, and a retractible pivot roller confined in the guide and normally aligned with the cradle trunnion pivot in a vertical direction, such pivot roller being cammed out of such vertical alignment as the cradle moves therepast to invert the box for drawing and stripping of the formed article onto a horizontal conveyor, such article being spaced a predetermined distance from the conveyor before the box is stripped therefrom.

3,627,023

APPARATUS FOR CASTING AND SHEARING SOLIDIFIED SPRUES

Kendall Clark, Poughkeepsie, and William A. Klein, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 25, 1969, Ser. No. 860,936
Int. Cl. B22d *31/00*
U.S. Cl. 164—264 **6 Claims**



Metal is cast onto a body within a die cavity having preformed areas of relatively small size into which metal may

be deposited. The metal, which is exterior of the die cavity after the metal within the cavity has solidified, is removed by shearing means.

3,627,024

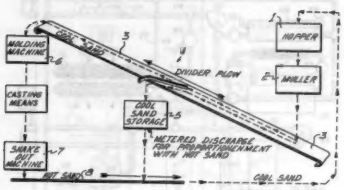
APPARATUS FOR HANDLING AND COOLING FOUNDRY SAND

Joseph S. Schumacher, Cincinnati, Ohio, assignor to International Minerals and Chemical Corporation, Skokie, Ill.

Continuation-in-part of application Ser. No. 714,339, Mar. 19, 1968, now Patent No. 3,461,941, dated Aug. 19, 1969. This application July 7, 1969, Ser. No. 839,259

Int. Cl. B22c 5/16; B22d 47/02

U.S. Cl. 164—270 8 Claims



Apparatus for handling and cooling foundry sand. No apparatus that uses air or water to cool the sand is used. Instead, conventional equipment including a muller, conveyors, storage tanks, a molding machine, a shakeout machine, a new sand dividing device, and a new sand-metering device, are employed.

3,627,025

TRAVELLING-BELT-TYPE APPARATUS FOR THE CONTINUOUS CASTING OF METAL STRIP

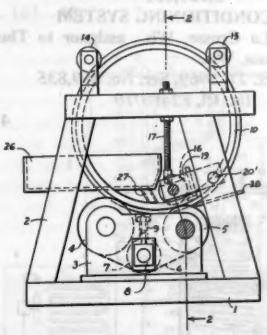
Kristof Tromel, and Georg Bollig, both of Buderich, Germany, assignors to Schloemann Aktiengesellschaft, Steinstrasse, Duesseldorf, Germany

Filed Aug. 5, 1970, Ser. No. 61,271

Claims priority, application Germany, Aug. 6, 1969, P 19 39 930.5

Int. Cl. B22d 11/06

U.S. Cl. 164—278 6 Claims



In an apparatus for the continuous casting of metal strip, liquid metal solidifies between a casting belt carried on a pair of guide rolls and a casting roll spaced from one of said guide rolls, and a pair of casting rings engage opposite edges of the upper stretch of said casting belt to form a basin and to retain molten metal supplied to said basin.

3,627,026

CURVED STRAND GUIDE

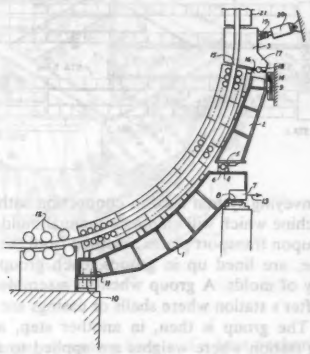
Gunter Bohne, Dusseldorf-Oberkassel; Walter Hess, Dusseldorf, and Adolf Meitz, Ratingen-Tiefenbroich, all of Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed May 2, 1969, Ser. No. 821,334

Claims priority, application Germany, May 4, 1968, P 17 28 271.7

Int. Cl. B22d 11/12

U.S. Cl. 164—282 7 Claims



A curved guide for a strand emerging from the mold of a continuous casting machine for guiding the strand from an approximately vertical path into an approximately horizontal path includes a frame defining the curved guide. The frame is in two sections, one above the other, with an articulated joint between. The lower section is mounted to be displaced horizontally in the plane of curvature of the guide when it thermally expands, while the upper section is mounted to be displaced vertically in said plane when it thermally expands.

3,627,027

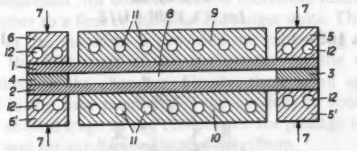
CASTING MOLD ASSEMBLY FOR CASTING CONTINUOUS STRIP

Alfred Adamec, and Roland Leder, both of Vienna, Austria, assignors to Wiener Schwachstromwerke GmbH, Vienna, Austria

Filed Oct. 6, 1969, Ser. No. 863,860

Int. Cl. B22d 11/12

U.S. Cl. 164—283 4 Claims



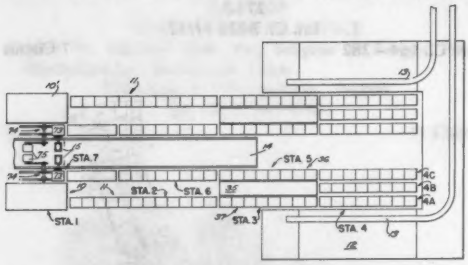
A mold comprises opposite sidewall portions defining between them a longitudinally continuous gap, which is open only at respective opposite ends. Cooling means for uniformly cooling metal moving longitudinally through said gap throughout the cross section of said gap comprise two plate coolers, each of which contacts one of the sidewall portions on the outside thereof over less than the width of the sidewall portion. Each of the plate coolers is formed with a duct system extending therethrough which is adapted to conduct a coolant for dissipating heat from the associated wall portion.

3,627,028

MOLD-HANDLING APPARATUS

Lucien W. Carignan, East Providence, R.I., assignor to New England Malleable Iron Company

Filed Nov. 29, 1968, Ser. No. 780,129
Int. Cl. B22d *5/00*
U.S. Cl. 164—323 **10 Claims**



A conveying system used in connection with a mold-forming machine which will eliminate manual mold handling. The molds, upon transport plates as issued from the mold-forming machine, are lined up in groups, each group comprising a plurality of molds. A group when so assembled is advanced to a shifter's station where shells or casings are put about the molds. The group is then, in another step, advanced to a pouring station where weights are applied to the molds and the molds are filled with molten metal. The group is then advanced through two cooling stations and then to a shifter's station where additional cooling takes place and the shells or casings are removed from the molds. The group is then advanced to a dumping station where the sand is dumped from the transport plate of each of the molds of the group and then the transport plates are returned and stacked into the molding machine from which they originally issued.

ERRATUM

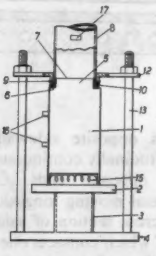
For Class 165—4 see:
Patent No. 3,627,014

3,627,029

METHOD AND APPARATUS FOR LOW-TEMPERATURE HEAT EXCHANGE

Donald Vernon Osborne, Norwich, and Michael Francis Whelan, Peterborough, both of England, assignors to National Research Development Corporation, London, England

Filed Apr. 11, 1969, Ser. No. 815,287
Claims priority, application Great Britain, Apr. 16, 1968, 17,841/68
Int. Cl. F28f *13/18*
U.S. Cl. 165—1 **10 Claims**



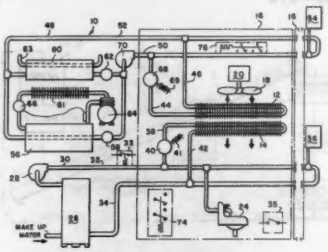
A method of exchanging heat between a solid and a fluid at very low temperatures comprising disposing at the interface thereof a film of material and exchanging heat through the film, the film material being chosen so that the value of the acoustic impedance as herein defined of the film is related to the acoustic impedances of the solid and the fluid, whereby the quantity Kr as herein defined is reduced relative to its value if no film were disposed at the interface.

3,627,030

HEATING, COOLING, DEHUMIDIFYING, AIR-CONDITIONING SYSTEM CONTROL

John W. Lorenz, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Jan. 2, 1970, Ser. No. 312
Int. Cl. F24f *3/00*
U.S. Cl. 165—22 **8 Claims**



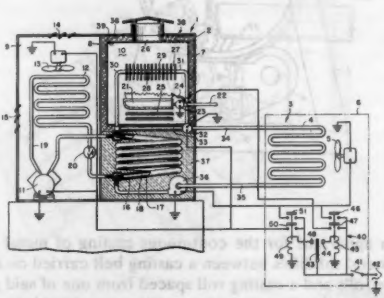
A zone-type heating, cooling, dehumidifying air-conditioning system is shown wherein each zone or unit is provided with a primary heat exchanger circuit and a secondary heat exchanger circuit. The primary heat exchanger is arranged to be supplied with warm water during the heating season and chilled water during the cooling season. The secondary heat exchanger is arranged to be supplied with domestic warm water. Each of the heat exchangers is provided with a control valve for controlling the circulation of heat exchange liquid therethrough. A fan is arranged to circulate air of the respective zone serially in heat exchange relationship with the primary heat exchanger and the secondary heat exchanger. A zone control system responsive to the temperature and humidity of the respective zone and the temperature of the heat exchange fluid being supplied to the heat exchangers controls the operation of the valves. Where domestic warm water is used for obtaining dehumidification, an overriding control prevents the use of domestic warm water for dehumidification in excess of the supply to thereby maintain the desired domestic warm water temperature.

3,627,031

AIR-CONDITIONING SYSTEM

Chester D. Ware, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Oct. 27, 1969, Ser. No. 869,835
Int. Cl. F24f *3/10*
U.S. Cl. 165—22 **4 Claims**



An outdoor hydronic heating-cooling unit provides hot and chilled liquid to an indoor fan coil unit. The outdoor unit has

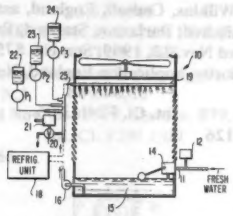
a compression cycle refrigeration system for cooling a liquid heat exchange fluid. The outdoor unit also includes a liquid heater with gas burner. A single pump is used to circulate heat exchange liquid between the indoor fan coil unit and the outdoor heating and cooling unit. The liquid heater is arranged above the liquid chiller within a single enclosure.

3,627,032

COOLING TOWER WATER TREATMENT SYSTEM

Philip S. Glad, Decatur; Frank D. Parker, Sr., Atlanta, and Richard W. Glad, Atlanta, all of Ga., assignors to Parker Engineered Chemicals, Inc., Atlanta, Ga.

Filed June 12, 1970, Ser. No. 45,621
Int. Cl. G05d *23/00*
U.S. Cl. 165—32 **9 Claims**



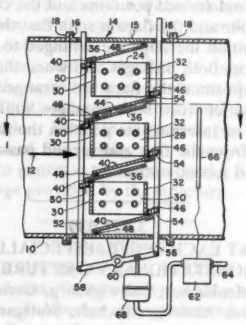
A water treatment system for a large capacity air conditioner or similar heat exchange system which includes a reservoir, a refrigeration unit, a cooling tower for spraying the water to the reservoir, and flow means for flowing water from the reservoir through the refrigeration unit to the cooling tower. Water makeup means is provided for adding additional fresh water to the reservoir, and a water drain system functions to drain away the stale water of the reservoir in response to the inflow of fresh makeup water. Chemical additive pumps function to add chemical compositions to the circulating water as makeup water is added to the system.

3,627,033

AIR HEATERS WITH ENCLOSING DAMPERS FOR PROTECTION AGAINST FREEZING

Clarence L. Ringquist, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Oct. 6, 1969, Ser. No. 864,002
Int. Cl. B60h *1/00*
U.S. Cl. 165—40 **2 Claims**



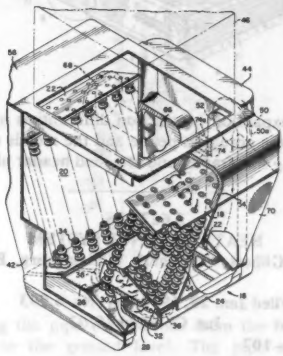
Apparatus for heating outside air having dampers which can be adjusted to fully enclose the heat exchange surfaces to reduce the heating effect without reducing the flow of heat exchange medium. The risk of damage to the coil from freezing is thereby eliminated.

3,627,034

HEAT EXCHANGER MOUNTING BASE AND HEAT EXCHANGER ASSEMBLY

Frank D. Howe, Painted Post, N.Y., assignor to Ingersoll-Rand Company, New York, N.Y.

Filed Mar. 12, 1970, Ser. No. 18,862
Int. Cl. F24h *3/08*
U.S. Cl. 165—47 **16 Claims**



A heat exchanger mounting base and a heat exchanger assembly for use with and in combination with a gas compressor for defining an improved inter- and after-cooler configuration. The base comprises upper and lower mounting surfaces; upper surfaces are provided for mounting a plurality of heat exchanger units. The lower, ported surface accommodates the transfer of gas to and from a compressor stage housing. Ducting formed within the base accommodates the transfer of gas from a given exhaust port of the compressor to the inter-cooler stage and therefrom to a second stage of the compressor. The base accommodates the transfer of gas from the second stage of the compressor through several passes of a second heat exchanger unit. The heat exchanger units are mounted in spaced relationship upon the base and, with end walls, define a chamber therewith. Grille work mounted on the outer surfaces of the heat exchanger units accommodates for the influx of coolant air through both heat exchanger units simultaneously and an updraft of the coolant air to an exhaust plenum. The cooling air is forced to flow through the grille work, and the chamber subsisting between the heat exchanger units, by means of a single fan motor mounted above the chamber. A manifold, comprising one of the end walls of the chamber has a plurality of apertures formed therethrough. One of the apertures accommodates for the inflow of a compressed gas product, from a first stage of the compressor, for communication therefrom through the base member to a first of the heat exchanger units. The other aperture in the manifold is provided for exhausting cooling air from the first stage of the compressor for the venting thereof through the chamber. Finally, there is an aperture provided in the base member for the conduct of cooling air from the second stage of the compressor for passage into the chamber and for exhausting thereof therefrom.

3,627,035

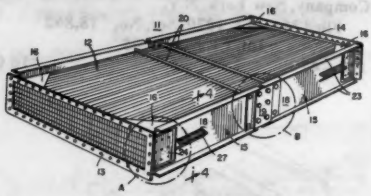
JUNCTION PLATES FOR MULTIPLE HEAT EXCHANGER UNITS

William V. Astrup, Racine, Wis., assignor to Young Radiator Company, Racine, Wis.

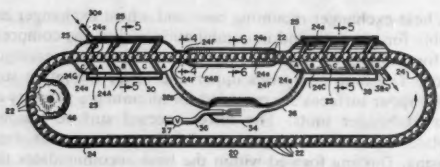
Filed July 20, 1970, Ser. No. 56,609
Int. Cl. F28f *7/00*
U.S. Cl. 165—81 **9 Claims**

The essential concept of this invention involves an improved arrangement of pairs of expansion module supports for the multiple section side frames for massive heat

exchanger core units required for cooling engines for large size transport vehicles, which expansion modules accommodate the expansion-contraction differentials in the metals required for the core unit per se and the metals required for the supporting side frames and attached header plates.

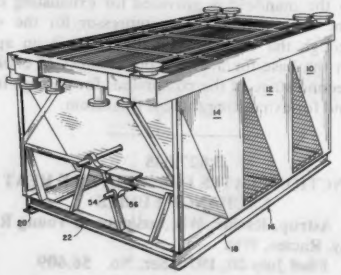


3,627,036
HEAT EXCHANGE SYSTEM
William W. Gilbert, 372 South Williamsburg, Birmingham, Mich.
Filed Jan. 29, 1970, Ser. No. 6,893
Int. Cl. F28d *19/02*
U.S. Cl. 165—107 **9 Claims**



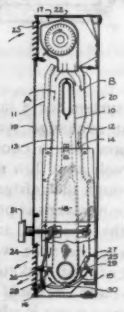
A high-temperature heat exchange system utilizing bodies of solid material as a heat exchange medium comprising a tubular conduit defining a flow path between a hot zone and a cooler zone, a conduit arranged to define, contain, and direct movement of the solid bodies in single file around a closed loop or path in heat exchange relation with fluid to be heated or cooled.

3,627,037
FACTORY-ASSEMBLED HEAT EXCHANGER
Raymond Murray Carr, Jr., Tulsa, Okla., assignor to Heat Fluid Engineering Corp., Tulsa, Okla.
Filed Apr. 27, 1970, Ser. No. 32,098
Int. Cl. F24h *3/06*
U.S. Cl. 165—122 **2 Claims**



A factory-assembled air-cooled heat exchanger including two or more modular air supply units connected in end-to-end relation, each modular unit having a vertical end wall and an opposite sloping end wall which converges downwardly towards, and connects with, the bottom of the vertical end wall. The resulting triangular sides are closed and the upper end of each unit is open to provide an exhaust leading to the heat-exchanger means. The vertical wall of each modular unit is provided with a circular fan opening in which is mounted a multiblade fan which is secured to a separate fan shaft rotatably mounted in each unit. Means are provided for connecting the ends of the fan shafts together so that the fans of all modular units can be rotated in unison. The heat exchange means will be mounted above the upper ends of the modular units and the resulting structure will be mounted on a skid of suitable size commensurate with the number of modular units employed.

3,627,038
HEATERS
Philip Arthur Wilkins, Codsall, England, assignor to Wilkins & Mitchell Limited, Darlaston, Stafford, England
Filed Nov. 12, 1969, Ser. No. 875,860
Claims priority, application England, Nov. 12, 1968, 53,548/68
Int. Cl. F24h *3/06*
U.S. Cl. 165—126 **5 Claims**

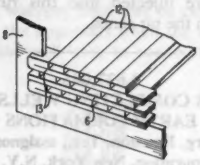


A space heater including first and second passages along which air is forced to flow on opposite sides of the heat-exchanger core to respective first and second outlets. Movable flaps are respectively associated with the first and second outlets and are coupled by lost motion devices to a pivotally mounted end member which defines in combination with the heat-exchanger core a third passage extending between said first and second outlets. The end member is setable into first intermediate and second positions and the coupling between the end member and the flaps is such that the end member is in its first position the flaps are arranged to direct air to the first outlet from both passages and when the end member is in its second position the flaps are arranged to direct air to the second outlet from both passages while when the end member is in its intermediate position the flaps are arranged to direct air from the first and second passages respectively to the first and second outlets.

3,627,039
HEAT EXCHANGER, ESPECIALLY FOR NONSTATIONARY GAS TURBINES
Eberhard Tiefenbacher, Ludwigsburg, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Oct. 24, 1969, Ser. No. 869,108
Int. Cl. F28f *9/02*
U.S. Cl. 165—158 **8 Claims**

A heat exchanger in which one of the two media is conducted through tubes while the other medium flows externally along the tubes in counterflow principle. The tubes are

arranged in several planes axially parallel to one another and the ends of the tubes, flattened off into rectangles, are combined in a common mounting for the connection of a group of tubes to a respective inlet or outlet aperture.

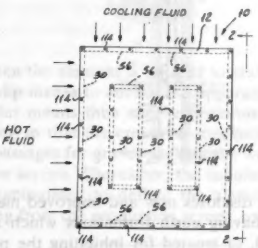


3,627,040

SIMPLIFIED HEAT EXCHANGER FOR PAPER MILLS AND THE LIKE

Joseph A. Villalobos, Ramsey, N.J., assignor to Aer Corporation, Ramsey, N.J.

Filed Nov. 24, 1969, Ser. No. 879,489
Int. Cl. F28f *3/00*
U.S. Cl. 165—166 **14 Claims**



A high-capacity, simplified heat exchanger for a paper mill or the like in which alternate pairs of adjacent plates of a multiplicity of flat, generally rectangular metal plates have lines of interlocking open spacers along a first pair of opposite edges and lines of interlocking closed spacers along a second pair of opposite edges while the other pairs of adjacent plates have lines of interlocking closed spacers along their first opposite edges and lines of interlocking open spacers along their second opposite edges so that each pair of adjacent plates have interlocking spacers extending continuously around their peripheries with the plates and spacers assembled by means of elongated bolts extending through the plates and the interlocking portions of the spacers thus to provide respective paths for the flow of fluid at right angles to each other through the spaces between the plates of adjacent pairs. Additional open and closed spacers may be bolted in position between adjacent plates within the peripheries thereof for rigidity, to reduce vibration of the structure, and to generate turbulence in the fluid to enhance the heat exchange provided by the structure.

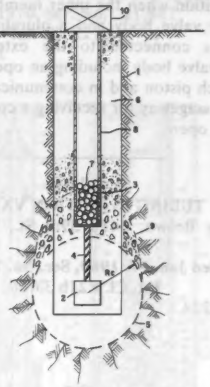
3,627,041

GAS-RECOVERY SYSTEM

Richard A. Heckman, Castro Valley, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Apr. 28, 1970, Ser. No. 32,678
Int. Cl. E21b *43/00*
U.S. Cl. 166—63 **2 Claims**

A system for recovering gas from a gas-bearing rock formation comprising means for fracturing the rock formation by a nuclear explosive and means for gas collection including a pipe sectionally perforated, which section is filled with steel balls to provide internal bracing to the pipe against the explosion compressive shock and to insure a flow path for released gas entering the pipe perforations from the fractured rock formation to the ground level. The pipe may then be recovered intact upon exhaustion of the gas.

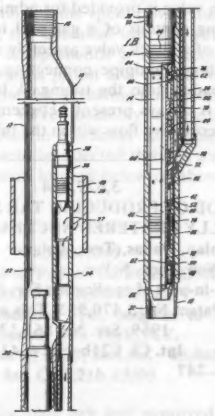


3,627,042

SUBSURFACE WELL SAFETY APPARATUS

Harold Edward McGowen, Jr., and Gilbert Henry Tausch, both of Houston, Tex., assignors to Camco Incorporated, Houston, Tex.

Filed June 30, 1970, Ser. No. 51,199
Int. Cl. E21b *33/00*
U.S. Cl. 166—224 **10 Claims**



A subsurface well safety apparatus for installation in a well fluid production tubing in a casing which is responsive to the casing pressure. A mandrel having a first open bore passageway and a second passageway laterally offset from the first passageway and a safety valve positioned in the mandrel first passageway. The valve including pressure responsive means acting to control the safety valve and in communication and controlled by pressure in the second mandrel passageway. The first mandrel passageway including first and second spaced apart smooth portions for receiving spaced apart seals on the safety valve and including latch receiving means above the smooth portions for receiving the well lock for supporting the safety valve in the first passageway. A

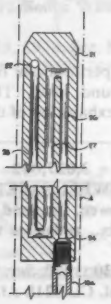
safety valve including an outer valve body having first and second spaced seals with a flap valve pivotally carried at the lower end of the valve body for normally closing the bottom of the valve body and an inner tubular member telescopically movable in the valve body which holds the flap valve in the downward position when the inner member projects out the bottom of the valve body and a plurality of longitudinally spaced pistons connected to the exterior of the inner member, the valve body including an opening leading to the top side of each piston and in communication with the mandrel second passageway for receiving a control fluid acting to keep the valve open.

3,627,043

TUBING INJECTION VALVE

William Henry Brown, 3418 39th St., Red Deer, Alberta, Canada

Filed Jan. 17, 1969, Ser. No. 792,061
Int. Cl. E21b *33/00*
U.S. Cl. 166—224 **1 Claim**



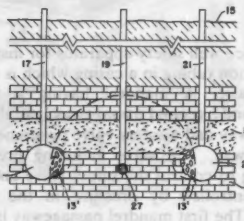
An injection valve is provided for admitting inhibiting fluid from the casing annulus of a gas well into the tubing. The valve consists of a check valve assembly and an elongate, upwardly extending standpipe connecting the valve assembly with a port leading into the tubing. A buffer column of inhibiting fluid is always present between the valve assembly parts and the corrosive flow within the tubing.

3,627,044

METHOD OF PRODUCING TAR SANDS WITH LATERALLY CRATERED NUCLEAR EXPLOSIONS

Henry F. Dunlap, Dallas, Tex., assignor to Atlantic Richfield Company, New York, N.Y.

Continuation-in-part of application Ser. No. 628,143, Apr. 3, 1967, now Patent No. 3,470,953. This application Sept. 25, 1969, Ser. No. 861,132
Int. Cl. E21b *43/24, 43/26*
U.S. Cl. 166—247 **22 Claims**



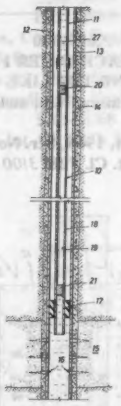
Two or more nuclear explosives are detonated a predetermined distance below a tar sand in a manner such that one explosion craters laterally into a cavity formed by an earlier explosion to form a relatively thin unique zone of rubble below the tar sand. The rubble is composed of material other than tar sand. The predetermined distance below the tar sand does not exceed 250 feet or three cavity radii whichever is smaller. Fluids are injected into this rubble to assist in producing oil from the tar sands.

3,627,045

METHODS FOR COMPLETING WELLS TRAVERSING EARTH FORMATIONS

Maurice P. Lebourg, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Mar. 2, 1970, Ser. No. 15,528
Int. Cl. E21b *43/04, 43/26, 43/27*
U.S. Cl. 166—278 **13 Claims**



This application discloses new and improved methods for completing wells having earth formations which are to be fractured, acidized, or treated for inhibiting the production of unconsolidated formation materials. In one manner of practicing the present invention, a tool string is arranged for suspension from a string of pipe and includes a well packer coupled to an elongated tubular member defining an enclosed chamber of a substantial volume and which is maintained at a reduced pressure by normally closed valves at the opposite ends of the chamber that are adapted to be selectively opened in succession. This tool string is then positioned in a cased well bore and the packer is set above a previously perforated interval traversing an earth formation which is to be treated. Once the packer is set to isolate the perforated interval from the well bore thereabove, the first of the two valves is selectively opened. Upon opening of the first valve, formation fluids will be suddenly exhausted into the reduced-pressure chamber for removing contaminants that may have previously entered the formation following the perforation of the casing so as to leave only uncontaminated formation materials immediately surrounding the perforations. Thereafter, the second valve is selectively opened for suddenly injecting pressured treating fluids from the supporting pipe string through the perforations and back into the adjacent earth formations.

3,627,046

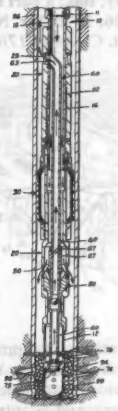
METHOD AND APPARATUS FOR POSITIONING AND GRAVEL PACKING A PRODUCTION SCREEN IN A WELL BORE

Henry W. Miller, and Malcolm G. Coone, both of Houston, Tex., assignors to Lynes, Inc.

Filed Nov. 10, 1969, Ser. No. 875,191
Int. Cl. E21b *43/04*
U.S. Cl. 166—278 **22 Claims**

A method and apparatus for positioning and gravel packing a production screen in a well bore wherein a housing

provided with a reinforced inflatable element and the production screen is coupled to a tubular means which is positioned in a well bore on a tubular string. The tubular means and housing are coupled together and form a crossover mechanism whereby fluid may be circulated in the well bore and then to the apparatus when the reinforced element is not sealed in the well bore to accomplish desired operations. When the element is inflated to seal in the well bore it actuates slip means to anchor the apparatus in the well bore. The tubular means then can be positioned longitudinally of the housing so that the crossover mechanism provides suitable flow passages for gravel packing the well bore around the production screen. Thereafter, the tubular string and means can be manipulated to deflate the element and disconnect the housing from the production screen, as desired.

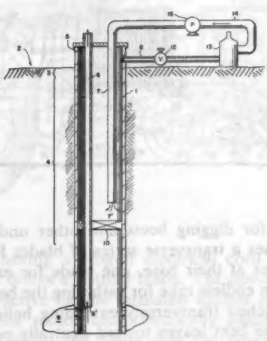


3,627,047

GAS PRODUCING METHOD

Leland E. Wilson, and Jerry M. Trickey, both of Anchorage, Alaska, assignors to Atlantic Richfield Company, New York, N.Y.

Filed May 19, 1970, Ser. No. 38,755
Int. Cl. E21b *43/24*
U.S. Cl. 166—302 **9 Claims**



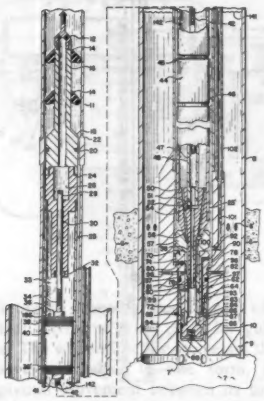
A method and apparatus for producing a gas well wherein gas is produced through a well bore and the well bore passes through a permafrost zone. The method and apparatus prevent solid hydrate from forming in the gas while passing through the permafrost zone toward the earth's surface.

3,627,048

HYDRAULIC WELL PUMPING METHOD

George K. Roeder, P.O. Box 4335, Odessa, Tex.

Original application June 3, 1968, Ser. No. 733,954, now Patent No. 3,517,741. Divided and this application June 1, 1970, Ser. No. 41,887
Int. Cl. E21b *43/16*
U.S. Cl. 166—305 R **10 Claims**



Method for operating a downhole hydraulic well pumping system. One aspect of the invention is directed to a method for injecting spent power fluid into a lower or upper stratum of the ground while extracting energy from the power fluid in order to pump oil from another stratum to the surface of the ground. This expedient enables the spent power fluid to be advantageously used as a water flooding agent, and further enables chemical treatment of the upper or lower stratum to be carried out by utilizing the spent power fluid as the vehicle for transporting the chemical into the stratum. The associated apparatus comprehends a new combination of a production unit having a piston and control valve assembly which forms an engine for actuating a downhole pump. The piston and control valve assembly cooperates with the downhole pump motor in a manner to enable spent power fluid from the engine to be injected through a standing valve assembly into a stratum located below or above the producing formation.

3,627,049

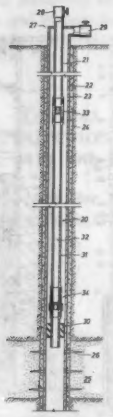
METHODS AND APPARATUS FOR COMPLETING PRODUCTION WELLS

David E. Young, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed June 3, 1970, Ser. No. 43,068
Int. Cl. E21b *43/00*
U.S. Cl. 166—314 **21 Claims**

This application discloses new and improved methods and apparatus for completing production wells having perforations which either are to be cleaned or penetrate earth formations which are to be fractured, acidized, or treated such as, for example, to inhibit the subsequent production of unconsolidated formation materials. To practice the present invention, a new and improved production tool is arranged for coupling into a string of production tubing and includes a typical well packer coupled to an elongated tubular member defining an enclosed chamber of a substantial volume and which is initially maintained at a reduced pressure by new and improved normally closed pressure-actuated valves arranged at the opposite ends of the tubular member and adapted to be selectively opened in succession. The production string and the tool are installed in a cased well bore with the packer being set above a previously perforated interval

traversing an earth formation which is to be subsequently produced. Once the customary wellhead equipment is installed to provide selective communication from the surface with the tubing and casing, the first of the two normally closed valves is selectively opened by increasing the pressure of the well bore fluids in the annulus above the packer. Upon opening of this first valve, formation fluids will be suddenly



exhausted into the reduced-pressure chamber for removing contaminants that may have previously entered the formation following the perforation of the casing so as to leave only uncontaminated formation materials immediately surrounding the perforations. Thereafter, the second normally closed valve is selectively opened by injecting selected fluids by way of the production string through the perforations and into the adjacent earth formations.

3,627,050

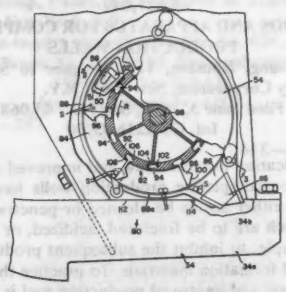
SEED CONVEYOR

Harold Valentine Hansen, Cordova, and Lester Carl Wolf, East Moline, both of Ill., assignors to Deere & Company, Moline, Ill.

Continuation of application Ser. No. 720,951, Apr. 12, 1968, now abandoned. This application June 18, 1970, Ser. No. 47,621

Int. Cl. A01c *5/00*

U.S. Cl. 111—77 **4 Claims**



A seed conveyor for a planter having a seed-selecting mechanism of the type having an apertured plate against which individual seeds are slidingly carried until they are ejected through the aperture. The seed conveyor receives the seed discharged through the aperture and conveys the seed to the ground. The conveyor is provided with a plurality of removable rubber paddles mounted upon a wheel. Seeds may be conveyed to the ground individually by using all the paddles, or they may be conveyed to the ground in groups by removing selected paddles.

3,627,051

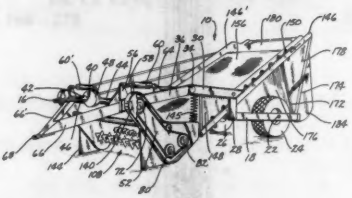
DEBRIS-GATHERING MEANS

James E. Schmitz, Ventura; Duard J. Suby, Clear Lake, and Donald E. Ransom, Ventura, all of Iowa, assignors to James F. Rhodes, Mason City, Ind., a part interest

Filed Jan. 26, 1970, Ser. No. 5,741

Int. Cl. A01d *17/06*

U.S. Cl. 171—89 **16 Claims**



A debris-gathering means comprising a wheeled frame means having a forwardly extending tongue portion secured to a prime mover. A rotor means extends across the forward end of the frame means and is adapted to penetrate the ground and to remove debris therefrom and to convey the debris rearwardly to a conveyor means extending outwardly and rearwardly therefrom. The rotor means includes front, intermediate and rear loaders. The conveyor means conveys the debris to a hopper means at the rearward end of the frame means. The hopper means is emptied by actuating a hydraulically operated dumping gate. Means is also provided for raising and lowering the rotor means with respect to the ground.

3,627,052

MACHINE FOR LIFTING BEETROOTS

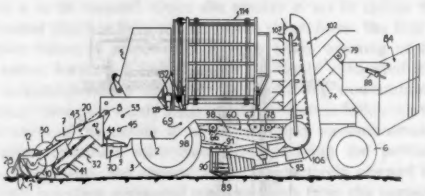
Raoul Georges Duquenne, 3, rue Ligny, Gaurain-Ramecroix, Belgium

Filed Dec. 19, 1969, Ser. No. 886,588

Claims priority, application Belgium, Dec. 12, 1968, 82686

Int. Cl. A01d *23/00*

U.S. Cl. 171—101 **11 Claims**



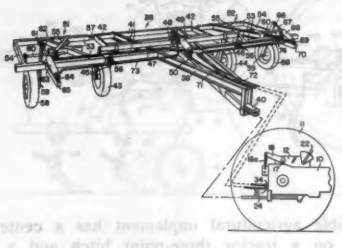
Apparatus for digging beets and other underground objects, comprises a transverse series of blades for cutting off the beet leaves at their base, one blade for each beet row, followed by an endless rake for gathering the beet leaves, and oppositely pitched transversely extending helical conveyors for moving the beet leaves toward centrally positioned longitudinally extending conveyors that deliver the beet leaves to a bin at the rear of the apparatus. A transverse row of diggers behind the blades digs the objects from the ground, and openwork rotors behind the diggers move the objects centrally and rearwardly toward a shelf elevator conveyor which delivers them into a bin that can be discharged by tipping or by a scraper conveyor.

3,627,053

HYDRAULIC POWER LIFT SYSTEM FOR TRACTOR AND TRAILING IMPLEMENT

Richard Wayne Hook, Des Moines; William Wayne Jackson, Altoona; Lamar William, Cedar Falls, and Kenneth Earl Murphy, both of Cedar Falls, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Apr. 28, 1969, Ser. No. 819,615
Int. Cl. A01b *63/112, 63/22;* F15b *11/00*
U.S. Cl. 172—9 20 Claims



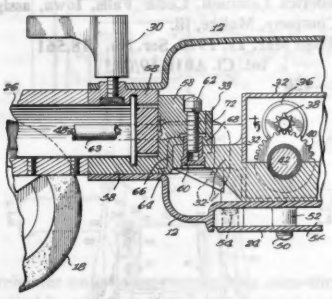
A tractor and trailing earthworking implement combination in which the implement includes a transverse series of frames pivotally connected together and mounted on vertically movable wheels operated by a plurality of series connected double-acting hydraulic cylinders which are connected to the tractor position and draft responsive hydraulic power lift system in series with the tractor rockshaft cylinder so that the implement frames are raised or lowered in unison and in substantially equal amounts in response to variations in draft loads.

3,627,054

LAWN EDGER WITH INSULATED HANDLE

Michael T. Lay, West Chicago, Ill., assignor to G. W. Murphy Industries, Inc.

Filed July 17, 1969, Ser. No. 842,596
Int. Cl. A01b *45/00*
U.S. Cl. 172—14 3 Claims



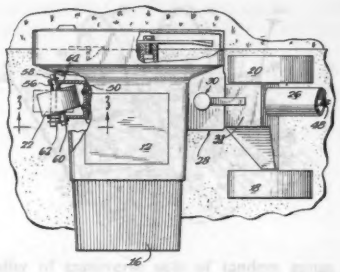
A device having a plug-in electrical cord for running a motor which drives a cutting blade. The device has an electrically conductive handle insulated against electrical spark jump from the motor and electrically insulated from the blade in the event the blade cuts the power cord. More specifically an edger-trimmer is described in which an insulating shaped barrier separates conductive portions of the motor and drive mounting frame from the handle and in which insulating elements space the guide plate, which is adjacent the blade, from the casing providing an airgap electrically isolating the guide plate from the conductive frame portions and from the handle of the device.

3,627,055

LAWN EDGER WITH GUIDING DEVICE

Michael T. Lay, West Chicago, Ill., assignor to G. W. Murphy Idustries, Inc.

Filed July 17, 1969, Ser. No. 842,597
Int. Cl. A01b *45/00*
U.S. Cl. 172—14 6 Claims



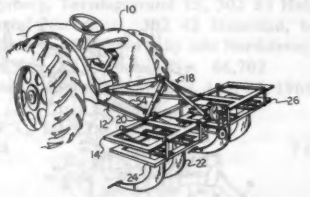
An inwardly turned wheel is used as part of the carriage for a lawn edger having a guide plate for guiding along a pavement edge. The wheel functions to retain the guide plate against the pavement edge. In one form, the wheel is mounted for pivotal movement between its turned position and a straight ahead position and turns to the straight ahead position during backward movement of the carriage.

3,627,056

VIBRATING PLOW WITH BALANCED FORCES

Thelmer A. Rogers, P.O. Drawer 1589, Lubbock, Tex.

Filed Dec. 23, 1968, Ser. No. 786,232
Int. Cl. A01b *35/00*
U.S. Cl. 172—40 1 Claim



This plow implement is made with a main frame and two plow-carrying subframes which are mounted for lateral swinging movement below the main frame. An eccentric arrangement between the two subframes laterally vibrates the subframes equally and opposite. Therefore, the main frame is isolated from vibration and is adapted to be attached to tractors or to have other machinery placed on it.

3,627,057

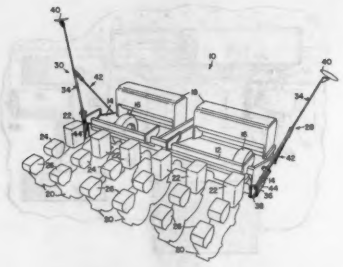
ROW MARKER SAFETY MECHANISM

Donald R. Hartwig, Rock Island, and Harold Valentine Hansen, Cordova, both of Ill., assignors to Deere & Company, Moline, Ill.

Filed Oct. 24, 1969, Ser. No. 869,311
Int. Cl. A01b *35/32, 61/00*
U.S. Cl. 172—126 13 Claims

A planter row marker includes a safety mechanism for preventing damage during marking operations to the marker arm and supporting structure in case the marker tool or outer portions of the arm should strike a relatively immovable object. The safety mechanism includes a rod which has one end reciprocably received in the bight portion of a spring clevis

and a spring pressure nut at the end of the rod holds a compression spring between the nut and the bight of the clevis. The safety mechanism is adapted for use with either nonfolding or folding markers and in the case of the former, the opposite ends of the safety mechanism are pivotally connected to the planter frame and an intermediate point along the marker arm and in the case of the latter, the opposite ends of



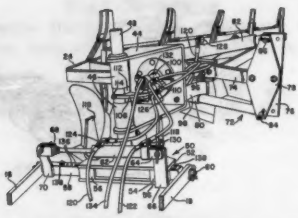
the safety mechanism are pivotally connected to the inner and outer arms of the foldable arm assembly. The rod of the safety mechanism includes two parts interconnected by a shear pin and should the load on the compression spring reach a predetermined value, the shear pin will break permitting outer sections of the nonfolding and folding marker arms to pivot rearwardly relative to inner arm sections.

3,627,058

TWO-WAY PLOW WITH AUTOMATIC LANDING

Bruno Bernhardt Johannsen, Moline, Ill., assignor to Deere & Company, Moline, Ill.

Filed July 9, 1969, Ser. No. 840,395
Int. Cl. A01b *3/42, 3/46, 65/02*
U.S. Cl. 172—206 **1 Claim**



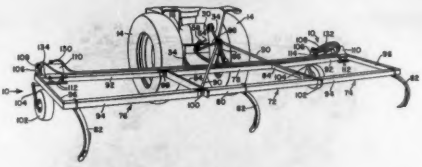
A semimounted rollover two-way plow having right- and left-hand plow bottoms rotatably mounted about a generally longitudinally extending tubular member, the tubular member being supported at its rear end by a steerable rear furrow wheel and at its front end by a transversely shiftable hitch crossbar. A pair of single-acting hydraulic cylinders rotate the plow bottoms between their alternate plowing positions while a first double-acting hydraulic cylinder sets the rear furrow wheel at alternate angular positions for right- and left-hand plowing so that the rear furrow wheel will be laterally offset from the centerline of the tractor and a second double-acting hydraulic cylinder sets the crossbar at alternate lateral positions for right- and left-hand plowing. The double-acting hydraulic cylinders are connected in parallel with each other and each of the single-acting cylinders is connected in parallel with one end of each of the double-acting cylinders so that when the plow bottoms are rotated between their alternate positions, the rear furrow wheel and hitch crossbar are simultaneously moved to their respective alternate positions.

3,627,059

GAUGE WHEEL ASSEMBLY FOR AGRICULTURAL IMPLEMENTS

William Wayne Jackson, and Richard Wayne Hook, both of Des Moines, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Dec. 22, 1969, Ser. No. 887,126
Int. Cl. A01b *63/22*
U.S. Cl. 172—413 **10 Claims**



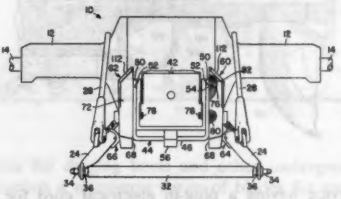
A flexible agricultural implement has a center frame mounted on a tractor three-point hitch and a pair of outrigger frames pivotally connected to the center frame for independent vertical pivotal movement relative to the center frame. The outrigger frame ends are raised and lowered by vertically adjustable gauge wheel assemblies which are operated by extensible and retractable hydraulic cylinders. The hydraulic cylinders for the gauge wheel assemblies are connected in series with each other and in series with the tractor rockshaft cylinder. The linkage of the gauge wheel assemblies is such that a single-size wheel assembly is compatible with several sizes of tractor rockshaft cylinders, and when attaching the implement to a different size tractor, only a single pin in each gauge wheel assembly needs to be repositioned to alter the location of one of the cylinder anchors. The cylinders on the wheel assemblies are large enough not to limit the stroke of the largest tractor rockshaft cylinder with which they are intended to be used, and when used with a smaller tractor rockshaft cylinder, only a portion of the stroke of the cylinders on the gauge wheel assemblies is used.

3,627,060

DRAFT LINK SWAY CONTROL MECHANISM

Norman Frederick Lemmon, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Mar. 11, 1970, Ser. No. 18,561
Int. Cl. A01b *59/043*
U.S. Cl. 172—450 **13 Claims**



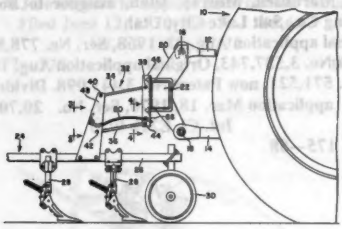
The draft links of a tractor carry clamplike bumpers which contact sway blocks mounted on a drawbar support on the opposite sides of the power takeoff housing. Each bumper is eccentric and tapered with respect to the longitudinal axis of the associated draft link and is clampable in positions spaced 180° about the axis to provide sway control for different hitch spacings or categories and is shiftable along the draft link to provide minor lateral adjustment.

3,627,061

EARTHWORKING TOOL MOUNTING MEANS

John Warren Sample, Ankeny, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Oct. 7, 1969, Ser. No. 864,459
Int. Cl. A01b *65/06, 71/02*
U.S. Cl. 172—462 2 Claims



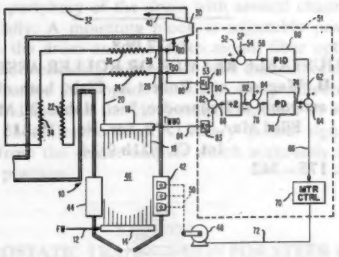
A resilient, two-way, vertically effective leaf spring means is operative between a support and an associated earthworking tool such as a cultivator to provide a down pressure on the cultivator when the support is lowered and to resiliently lift the cultivator when the support is raised.

3,627,062

HEAT DISTRIBUTION CONTROL IN ONCE-THROUGH BOILERS

Theron W. Jenkins, Jr., Ambler, Pa., assignor to Leeds & Northrup Company, Philadelphia, Pa.

Filed June 1, 1970, Ser. No. 48,585
Int. Cl. F22g *5/06*
U.S. Cl. 122—479 R 12 Claims



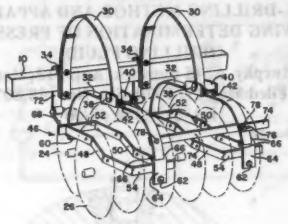
The reheater outlet temperature of a once-through boiler is controlled by adjustment of a manipulated variable which modifies the heat distribution in the boiler. By using only a small amount of proportional and rate response to the reheater outlet temperature deviations, the response of the control may be made relatively insensitive to transient disturbances for causes which do not change the heat distribution. A significant proportional and rate response is provided from an index of the heat distribution and that response is added to the control response from the reheater temperature deviation to provide an effective control of those disturbances which do affect the heat distribution. The index is calculated as the difference between the reheater outlet temperature and the average of the superheater outlet temperature and the waterwall outlet temperature.

3,627,063

ROTARY HOE

Edward Clyde Ryan, Ankeny, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Nov. 7, 1969, Ser. No. 874,858
Int. Cl. A01b *35/28, 39/08*
U.S. Cl. 172—627 11 Claims



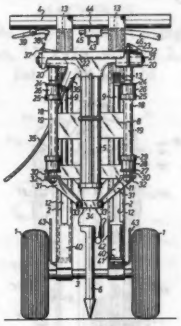
A plurality of transverse sets of tandem gangs of hoe wheels are individually mounted on a toolbar by leaf springs which will transfer the weight of the toolbar to the gangs and allow a high degree of flexibility between the sets of gangs and between the gangs of a single set so that the gangs can follow the ground contour. Each set of gangs is mounted on a subframe which in turn is mounted on a first leaf spring for rotational movement about a fore-and-aft extending axis so that the subframes can pivot to the side and conform to the contour of the ground when working bedded crops. The first leaf spring is pivotally connected to one end of a second leaf spring which has its opposite ends rigidly secured to the toolbar. A draft link extending between each subframe and a toolbar relieve the leaf springs of draft forces.

3,627,064

IMPLEMENT WITH GROUND-BREAKING IMPACT TOOL

Ake Lennart Sjoberg, Torsdagsgrand 15, 302 53 Halmstad, and Carl Gustaf Nordstrom, 302 42 Halmstad, both of Sweden, assignors to said Sjoberg, by said Nordstrom

Filed Aug. 25, 1970, Ser. No. 66,702
Claims priority, application Sweden, Aug. 26, 1969, 11793/69
Int. Cl. E01c *23/09*
U.S. Cl. 173—24 7 Claims



An implement for ground breaking comprises a driving apparatus with a ground-breaking impact tool operable to reciprocate the tool in a longitudinal direction, and a cart with a planar frame having coaxial wheels at a bottom end and operating handle means at a top end. On one side of the frame are mounted guides in spaced relation to the plane of the frame. By mounting means the driving apparatus is

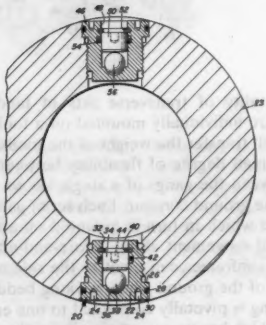
mounted on said guides for reciprocation in parallel with the longitudinal reciprocation direction of the tool and in parallel with the plane of the frame. Biasing means yieldingly counteract such reciprocation of the driving apparatus in relation to the guides. Control means for controlling the operation of the driving apparatus are mounted on the handle means.

3,627,065

WELL-DRILLING METHOD AND APPARATUS INVOLVING DETERMINATION OF PRESSURE OF DRILLING FLUID

Donald R. Murphy, 6245 Renwick, Apt. 213, Houston, Tex.

Filed May 19, 1970, Ser. No. 38,807
Int. Cl. E21b *47/06*
U.S. Cl. 175—48 **14 Claims**



The pressure of drilling fluid in well-drilling apparatus is determined from the amount of deformation of a member which is attached to the drilling string and subjected to forces exerted by the pressurized drilling mud.

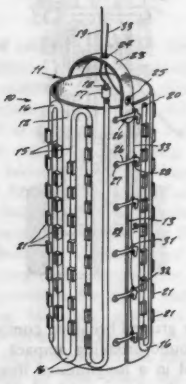
The method involves determination of the pressure drop across the drilling bit by studying the extent of deformation of deformable members on the drilling string and changing the jet nozzles in the drilling bit when the pressure drop falls outside a prescribed range.

3,627,066

PERFORATOR FOR WATER AND OIL WELLS

Woodrow W. Johnson, Box 348, Cle Elum, Wash.

Filed July 8, 1970, Ser. No. 53,118
Int. Cl. E21b *43/117*
U.S. Cl. 175—4.53 **4 Claims**



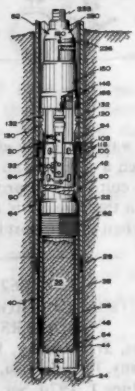
A device for perforating well casings so to increase a water or oil supply from the rock strata formation into the well, the device comprising an elongated billet lowered into the well, the billet including a plurality of pads around its outer side for positioning against the inner wall of the well, each pad having sharp curving edges, each pad containing explosives which is electrically ignited from above ground so that upon explosion the sharp edges of the pads crack the well casing.

3,627,067

CORE-DRILLING SYSTEM

Lyle J. Martinsen, Murray, Utah, assignor to Boyles Bros. Drilling Co., Salt Lake City, Utah

Original application Aug. 27, 1968, Ser. No. 778,879, now Patent No. 3,537,743, Original application Aug. 10, 1966, Ser. No. 571,521, now Patent No. 3,441,098. Divided and this application Mar. 18, 1970, Ser. No. 20,709
Int. Cl. E21b *9/20*
U.S. Cl. 175—58 **3 Claims**



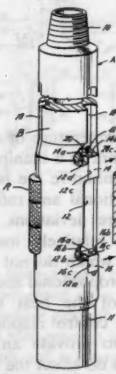
A core-drilling system comprising a novel method which accommodates disablement of an overshot for selective or controlled release of its coupling relation with spearhead or latch structure of a core barrel assembly within a drill hole when an operator pumps the wire line to which the overshot is attached, up and down a prescribed number of times.

3,627,068

ADJUSTABLE REAMER OR ROLLER ASSEMBLY

Hubert H. Wagnon, and Robert A. Blair, both of Hobbs, N. Mex., assignors to Drilprodco, Inc., Hobbs, N. Mex.

Filed Mar. 13, 1970, Ser. No. 19,215
Int. Cl. E21b *9/24*
U.S. Cl. 175—342 **10 Claims**



An adjustable roller assembly for use in the enlargement of a well bore, and on the inside of a collapsed casing or pipe to

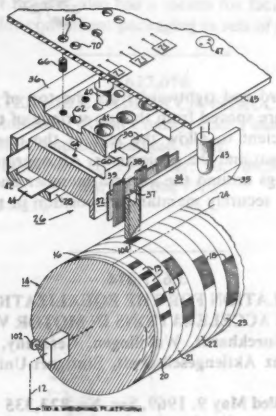
roll same out to its original diameter, and for the other uses wherein reaming or other enlargement is desired. The assembly is adjustable in the field by inexperienced personnel and with a minimum of time and manipulation for effecting the adjustment.

3,627,069

WEIGHER WITH OPTICAL DETECTOR

Robert H. Ray, Cinnaminson, and John M. Holt, Cherry Hill, both of N.J., assignors to Applied Information Industries

Filed June 12, 1970, Ser. No. 45,697
Int. Cl. G01g *23/32*
U.S. Cl. 177—178 **17 Claims**



In a computer weigher, an optical device is used to detect the position of balance of the weigher mechanism by measuring the rotary position of a drum connected to the weigher mechanism. On thedrum, a Gray code chart is arranged around the periphery of the drum with several channels extending axially. A mounting block is adjustably positioned adjacent to the drum and is used to mount fiber optics and photoelectric measuring means. For each channel of code on the drum chart, a fiber optics bundle picks up reflected light at one end adjacent to the chart and transmits it to its other end at a photoelectric sensor. Binary coded signals are generated from the sensor outputs which accurately identify each drum position.

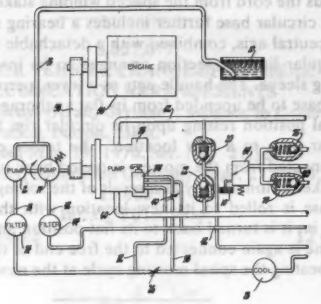
3,627,070

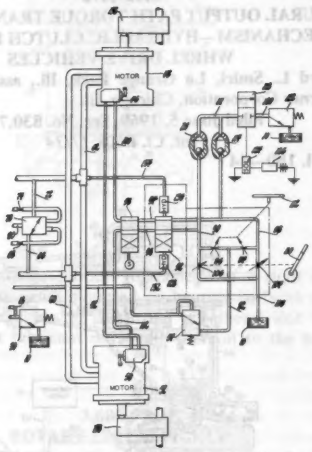
HYDROSTATIC TRANSMISSION FOR STEER BY DRIVING VEHICLES

Robert B. Colten, Santa Barbara, Calif., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 30, 1970, Ser. No. 33,256
Int. Cl. B62d *11/04*
U.S. Cl. 180—6.48 **7 Claims**

A fluid transmission having a pump and a pair of fluid motors for driving and steering a vehicle. Pump displacement is varied to control speed at low speeds. The displacement of both motors is concurrently varied to control speed at high speeds and direction at all speeds. The displacement of the fluid motors is independently varied for steering. The displacement of the pump and the motors is controlled by a fluid pressure control having a plurality of variable restrictions, two restrictions being varied by the vehicle steering mechanism to provide a torque differential between the motors and two other restrictions being varied by a manual control to control vehicle speed and direction. A directional valve responsive to drive system pressure acts in combination with the steer restrictions for proper steer control during





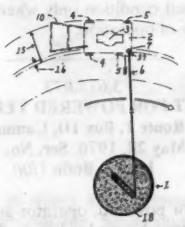
coasting. A second directional valve responsive to the manual control provides forward or reverse steer control.

3,627,071

TETHERING DEVICE FOR SELF-PROPELLED MACHINES

Walter H. Haupt, 604 Wayne Road, Covington, Ky.

Filed Jan. 12, 1970, Ser. No. 2,236
Int. Cl. B62d *1/24*
U.S. Cl. 180—79 **5 Claims**



A tethering device for a self-propelled lawnmower which includes a circular reel base normally resting in flat stationary position on the ground and having a pair of upstanding winding stakes spaced apart from the central axis of the base, with a tether cord wound in loop formation about the stakes.

The outer or free end of the cord is connected to the mowing machine for guiding the machine. In operation, the self-propelled tethered mower describes a generally spiral cutting path or swath as it circles about the flat stationary base and unwinds the cord from the spaced winding stakes.

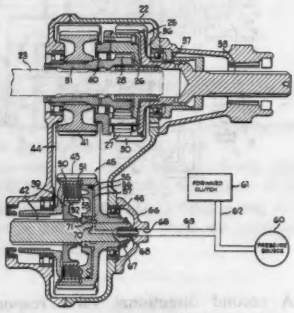
The circular base further includes a bearing sleeve located at its central axis, combined with a detachable handle having an angular limb or section arranged to be inserted into the bearing sleeve. The handle acts as a lever, permitting the circular base to be upended from its flat anchorage position to a vertical position resting upon its circular rim for rolling the circular base to a new location. The tether cord, which is disconnected from the mower, is reeled back upon the winding stakes automatically as a result of the rolling action. After the base is rolled to its new location with the tether cord reeled in, it is turned back to its flat position and the mowing machine is again connected to the free end of the tether cord for repeating the spiral mowing cycle at the new location.

3,627,072

PLURAL OUTPUT PATH TORQUE TRANSMITTING MECHANISM—HYDRAULIC CLUTCH FOR FOUR WHEEL DRIVE VEHICLES

Richard L. Smirl, La Grange Park, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed June 5, 1969, Ser. No. 830,711
Int. Cl. B60k *17/34*
U.S. Cl. 180—44 **15 Claims**



A multiple output path drive system for a vehicle having plural pairs of traction wheels including a torque transfer mechanism adapted to receive an input torque which incorporates a differential gear mechanism adapted to distribute the input torque to a plurality of drive axles and a fluid pressure responsive clutch between the differential gear mechanism and at least one drive axle in fluid communication with a pressure source of an automatic transmission, the clutch and fluid pressure source adapted to urge the clutch into a fully engaged condition only when the transmission is in a forward mode of operation.

3,627,073

SEAT FOR POWERED VEHICLE

Larry L. Grimm, Route 1, Box 1D, Cannon Falls, Minn.

Filed May 28, 1970, Ser. No. 41,252
Int. Cl. B60n *1/00*
U.S. Cl. 180—82 **8 Claims**

A novel seat for powered, operator-guided vehicles which are arranged to travel over land is disclosed. The preferred embodiment of such a vehicle disclosed herein is a snowmobile which includes a chassis, a motor mounted on the chassis, treads driven by the motor and arranged to propel the vehicle, handle bars connected to rotatable front skis for guiding and steering the vehicle, and a generally flat operator seat mounted upon the chassis. Novel apparatus for aiding the operator in maintaining his position upon the operator seat is further disclosed including a vertically rising member arranged to attach to either the operator seat or the chassis, near the front of the operator seat and project above the operator seat. The vertical member is of a width which will allow the legs of an operator to fit around it. Two extensions

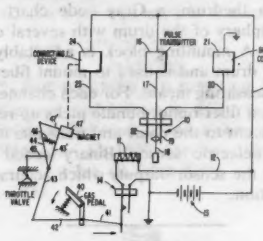
project leftward and rightward from the top of the vertical member and are spaced from the top surface of the seat by a distance sufficient to allow the legs of the operator to fit between the seat and the projections. An operator may thus position his legs around the vertical member and under the projections to securely maintain his position in the operator seat.

3,627,074

INSTALLATION FOR THE EQUALIZATION OF EXCESSIVE ACCELERATIONS IN MOTOR VEHICLES

Manfred H. Burckhardt, Waiblingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed May 9, 1969, Ser. No. 823,335
Claims priority, application Germany, May 10, 1968, P 17 55 454.0
Int. Cl. B60k *33/00*
U.S. Cl. 180—82 **17 Claims**



An installation in which a pulse transmitter or a set of pulse transmitters is adapted to be connected either with a brake-force control device or with a correcting member reducing the engine output, depending on whether or not the gas pedal or brake pedal is depressed.

3,627,075

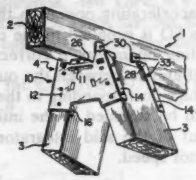
SAWHORSE BRACKET ASSEMBLY

Sherwood G. Enders, and Avram M. Meshulam, both of Baltimore, Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed Sept. 30, 1970, Ser. No. 76,692
Int. Cl. F16m *11/00;* **E04g** *1/32*
U.S. Cl. 182—224 **5 Claims**

A support bracket for use in the assembly of the rail and legs of a sawhorse comprising a plate including a generally triangularly shaped face having flanges angularly disposed

rearwardly to form sides and means formed rigid with the face and cooperating with the sides to locate the sawhorse legs. A slot in the upper portion of the face receives the rail



and is formed with sides converging toward the bottom to provide a biting contact when said rail is driven into place. The support bracket also has a means for facilitating a nesting feature for convenient packaging in sets of two or more.

3,627,076

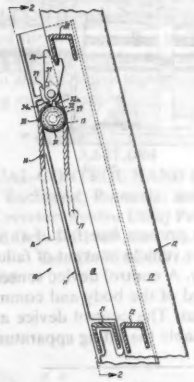
EXTENSIBLE LADDER CONSTRUCTION

Merritt A. Robinson, Marin County, Calif., assignor to Industrial Ladder Company, Oakland, Calif.

Filed Nov. 16, 1970, Ser. No. 89,546

Int. Cl. E06c 1/12

U.S. Cl. 182—212 **6 Claims**



An extensible ladder construction of a type employing first and second sections extensible lengthwise relative to each other wherein the sections each comprise a pair of laterally spaced elongated stringers and tread members uniformly spaced longitudinally of each section and carried at their opposite ends by the stringers is arranged whereby the stringers are of channel shaped cross section to provide, in each instance, a web and parallel side flanges, the stringers of the first and second sections being turned 180° relative to each other and with the ends of tread members from both of the first and second sections disposed between the flanges of the stringers of the first section so as to retain the two sections in guided relation. Accordingly, one pair of stringers includes a guide channel for receiving a flange and the ends of the laterally extending tread members of another pair of stringers so as to provide a double width tread construction while increasing the thickness of the ladder on the order of no more than 50 percent. Means for lifting one section with respect to the other are provided which are movable with rotation of a pulley and operable therewith for engaging a portion of a latch means so as to move the latch between advanced and retracted positions for engaging and releasing the two sections. A slip drive means interposed between the pulley and the last named means permits relative movement between the last named means and the pulley during raising and lowering one section upon engagement of that section with the latch means.

3,627,077

MOTOR VEHICLE CHANGE-SPEED GEAR LUBRICATION ARRANGEMENTS

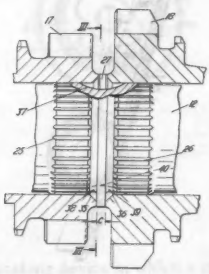
Otto Grupe, Gross-Gerau, Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 19, 1970, Ser. No. 21,110

Claims priority, application Germany, Mar. 27, 1969, P 19 15 605.9

Int. Cl. F01m 9/06

U.S. Cl. 184—6.12 **12 Claims**



An annular flange portion rotatable with a shaft spaces apart two rotary gears mounted on bearing surfaces on the shaft. The flange has at least one peripheral slot whose sidewalls direct lubricant impinging thereon to the bearing surfaces.

3,627,078

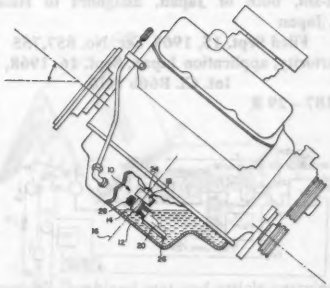
ROTARY LIQUID PICKUP

James C. Burrous, Cupertino, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Nov. 12, 1970, Ser. No. 88,558

Int. Cl. F01m 1/06

U.S. Cl. 184—6.2 **7 Claims**



An improvement in liquid pickup systems for drawing liquid from a tilting vehicular liquid reservoir. A pickup member is mounted to rotate within the reservoir by gravitational force when the reservoir is tilted, and an eccentrically mounted unbalancing member integral therewith provides positive rotation of the pickup member. The unbalancing member has a density substantially less than the density of the normally submerged portion of the pickup member so as to provide a substantial shift in the position of the gravita-

tional force acting on the pickup member as the unbalancing member changes from a submerged to a nonsubmerged state.

3,627,079

ELEVATOR SYSTEM FOR MINE SHAFT

Swend F. L. Nielsen, San Mateo, and Guido K. Wegner, Pacifica, both of Calif., assignors to Norse Development Corporation, Rye, N.Y.

Filed Oct. 31, 1969, Ser. No. 872,898
Int. Cl. B66b 9/06
U.S. Cl. 187—12 9 Claims

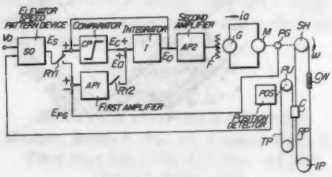
An underground elevator system for mine personnel comprised of support mast formed from a plurality of prefabricated structural sections that are connected in an end-to-end arrangement and secured to one side of an excavated shaft. The mast includes an emergency escape ladder enclosed by removable wire mesh and a cab movable along and guided by one side of the mast, the cab being mounted thereon by means that can be adjusted to maintain it level despite the degree of mast incline. The cab is driven by cable hoist means mounted at the top of the mast and includes an overspeed-catching means and a slip-sensing safety means.

3,627,080

SPEED CONTROL SYSTEM FOR ELEVATORS

Takeo Yuminaka, Katsuta-shi, and Toshiaki Kurosawa, Hitachi-shi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 15, 1969, Ser. No. 857,755
Claims priority, application Japan, Sept. 16, 1968, 43/66106
Int. Cl. B66b 1/30
U.S. Cl. 187—29 R 3 Claims



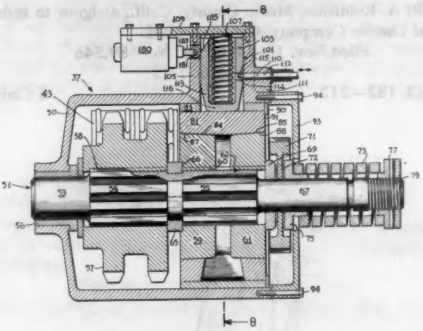
A speed control system for elevators, wherein there is provided a speed pattern means SO for providing a constant speed pattern voltage during the accelerating operation and a deceleration pattern voltage which decreases in a stepped manner whenever the elevator cage arrives at each one of a plurality of present deceleration points during the decelerating operation, the output of the said means SO is supplied to a comparator CP having positive and negative saturation characteristics, the output of the comparator CP is integrated by an integrator I, and the output of the integrator is negatively fed back to the input side of the comparator CP and at the same time to the elevator speed control system, and wherein during the accelerating operation the output of the speed pattern means SO is supplied to the comparator, and during the decelerating operation, a correction signal corresponding to the difference between the output of the said means SO and a voltage corresponding to the actual elevator speed is generated to be supplied to the integrator, thereby correcting the output of the said integrator in accordance with the actual elevator speed.

3,627,081

BRAKE APPARATUS

Gerard R. Santos, Levittown, Pa., assignor to Boothe Airside Services, Inc.

Filed July 31, 1969, Ser. No. 846,553
Int. Cl. B66b 1/24, 1/26
U.S. Cl. 187—38 7 Claims



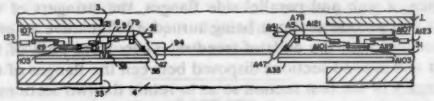
Brake apparatus to prevent free fall of an elevatable body of a passenger transfer vehicle in event of failure of the lifting apparatus of the body. A control device senses an increase in normal lowering speed of the body and commands actuation of the brake apparatus. The control device also provides an electrical signal to disable the lifting apparatus of the body.

3,627,082

ELEVATOR DOOR SAFETY DEVICE

Harry Berkovitz, Glen Rock, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 7, 1970, Ser. No. 026,229
Int. Cl. B66b 13/00
U.S. Cl. 187—52 12 Claims



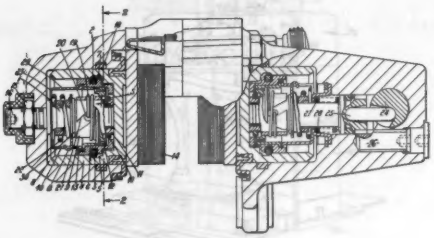
Mechanical safety edges mounted on the leading edges of the elevator car doors are projected into the path of the hoistway doors during door closing to protect objects from being struck by either the car doors or hoistway doors. A toggle device restrains a harmonic motion mechanism from extending the safety edges when the doors are preopened as the car approaches a landing. The edges can be adapted for use in conjunction with radiant energy detecting devices.

3,627,083

DISC BRAKE ADJUSTING MECHANISM

Hermann Seip, Bad Vilbel, and Erich Rabich, Sprendlingen, both of Germany, assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 5, 1969, Ser. No. 882,526
Claims priority, application Germany, Dec. 9, 1968, P 18 13 560.9
Int. Cl. F16d *65/56, 55/18*
U.S. Cl. 188—71.8 5 Claims



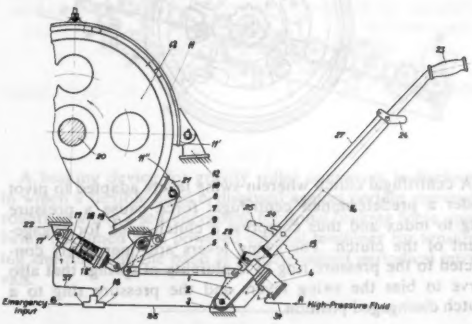
An improved automatic adjusting device for disc brakes which prevents damage to the adjusting device when the permissible actuator piston stroke is exceeded. The connection between the piston and the adjusting device is releasable when the axial force exceeds a predetermined limit. In the embodiment shown the connection is formed by a deformable ring mounted in facing grooves in the piston and adjusting parts so that the ring may be forced completely into one of the grooves to allow relative movement between the piston and the adjusting mechanism.

3,627,084

DUAL-CONTROL HAND BRAKE

Vasile Benedek, Bucharest, Romania, assignor to Institutul de Proiectari si Cercetari Pentru Utilaj Petrolier

Filed Oct. 14, 1969, Ser. No. 866,217
Int. Cl. F16d *65/18*
U.S. Cl. 188—105 7 Claims



A brake band for a drum brake is hydraulically or pneumatically tensionable by a servo piston under the control of a throttle valve mounted on a swingable arm which is mechanically linked with the brake band and whose pivotal axle supports an independently swingable operating lever. An abutment on that lever coacts with a spring loaded control pin for the throttle valve and also confronts a stop on that valve for rotative entrainment of the swingable arm to tension the brake band mechanically upon failure in the hydraulic or pneumatic circuit. The mechanical linkage between the brake band and the throttle valve normally maintains a certain gap between the lever abutment and the confronting stop.

3,627,085

AUTOMATIC BRAKING DEVICE IN SPRING MOTOR

Ishi Habuka; Kazuko Habuka, and Takashi Habuka, all of 23-8, 3-Chome, Sengoku, Bunkyo-ku, Tokyo-to, Japan

Filed Nov. 4, 1969, Ser. No. 873,899
Int. Cl. B60t *7/12*
U.S. Cl. 188—184 3 Claims

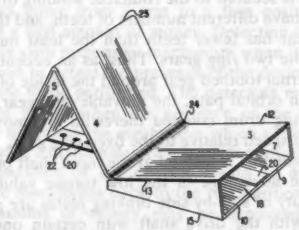
An automatic braking device in which a stationary cylinder is fixed to a dead shaft of a spring motor, at least two expanding brake shoes are pivoted on a rotatable drum of the motor and centrifugally operated to contact and apply frictional force to the inner surface of the stationary cylinder when the drum speed exceeds a predetermined value, and spring means for exerting return torque on the brake shoes. This braking device thus operates automatically to brake the drum and thereby absorb and dissipate kinetic energy which would otherwise cause impact.

3,627,086

COMBINED SEAT AND ARTICLE CARRYING CASE

Robert A. Caigan, 1134 First Ave., New York, N.Y., and Gideon Loewenstein, 39-37 46th St., Long Island City, N.Y.

Filed May 7, 1970, Ser. No. 35,519
Int. Cl. A47c *13/00*
U.S. Cl. 190—8 7 Claims



An inexpensive combined seat and article-carrying case is formed from a single, flat blank of paper stock. The blank is provided with score lines whereby an open-ended receptacle or case formation is provided, which case also serves as the seat. Other transverse score lines on the blank divide it into a backrest panel adjacent the seat and a backrest support panel adjacent the backrest panel. The transverse score lines between the panels act as hinge lines whereby the panels may be placed in various angular related positions. The panels are held in their placed position by a belt means, one end of which is fixed within the case formation and the other end of which is adjustably secured to the backrest support panel.

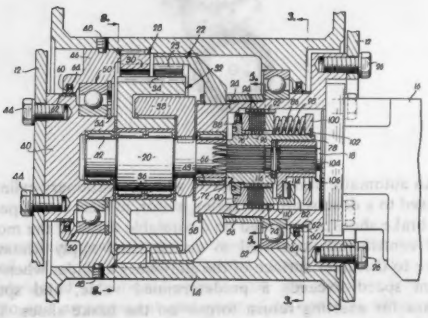
The seat can be converted into an article carrier by folding the backrest panels on the seat portion and thereafter passing the belt over the folded backrest panels and across the open front end of the case formation to engage a fastening means secured to the bottom of the case formation. Thus, the panels are held in a folded position, and the portion of the belt bridging the open end of the case serves as a handle to carry the unit.

3,627,087

ORBITING GEAR WINCH AND BRAKE THEREFOR

Wade A. Eskridge, Overland Park, Kans., assignor to A. B. Chance Company, Centralia, Mo.

Filed Dec. 9, 1969, Ser. No. 883,466
Int. Cl. F16d *55/38, 59/02;* **B66d** *5/12*
U.S. Cl. 192—8 **18 Claims**



A gear apparatus and brake assembly for a power-operated winch having a rotatable winding drum are both completely contained within the drum. The gear apparatus includes an inner external toothed gear having first and second toothed sections which simultaneously engage first and second outer internal toothed ring gears, one of which is fixed and the other of which is secured to the rotatable winding drum. The two ring gears have different numbers of teeth, and the external toothed gear has fewer teeth than the least number of either one of the two ring gears. Thus, as an eccentric shaft moves the external toothed gear around the inside of the two ring gears in an orbital path, the movable ring gear and the rotatable winding drum coupled therewith are moved at a greatly reduced speed relative to the fixed ring gear.

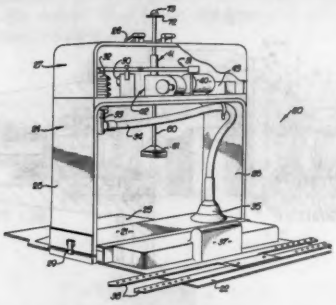
The brake assembly is located at the input shaft of the apparatus to take advantage of the low torque value at this point. A plurality of side-by-side braking plates are provided in alignment with the drive shaft with certain ones being fixed against rotation while others are rotatable with the driven shaft of the gear apparatus. The plates are movable toward and away from each other and springs normally bias them into frictional interengagement to lock the driven shaft against rotation. Cam means in the form of a number of coupling pins interposed between the drive structure and the driven shaft are operable by the drive structure to remove the bias on the braking plates in response to rotation of the drive shaft when the drive is operated and to permit return movement of the cam pins to their initial positions within respective recesses therefor when the drive shaft ceases rotation whereby the spring bias on the braking plates causes the same to move back into braking disposition.

3,627,088

DRIVE RELEASE AND REPOSITIONING MEANS FOR A RECIPROCATING MEMBER

John T. Muller, Box 296, Hanover, N.J.

Original application Apr. 15, 1968, Ser. No. 721,301, now Patent No. 3,552,390, dated Jan. 5, 1971. Divided and this application June 24, 1970, Ser. No. 49,341
Int. Cl. F16d *71/02*
U.S. Cl. 192—142 R **5 Claims**



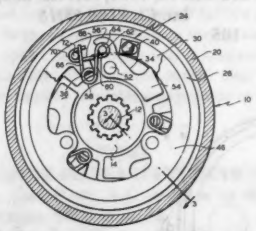
Cardiopulmonary resuscitating apparatus for automatically providing constant, substantial rhythmic heart perfusion at a rate equal to a normal heart beat and timed ventilation of the patient's lungs to provide artificial ventilation and circulation during cardiac arrest.

3,627,089

CENTRIFUGAL CLUTCH

Donald S. Dence, Brooklyn, Mich., assignor to Clark Equipment Company

Filed July 13, 1970, Ser. No. 54,262
Int. Cl. F16d *43/24*
U.S. Cl. 192—105 CP **13 Claims**



A centrifugal clutch wherein swing levers adapted to pivot under a predetermined centrifugal force cause a pressure ring to index and thus compress a clutch pack for engagement of the clutch. The swing levers are operatively connected to the pressure ring by a plurality of springs that also serve to bias the swing levers and the pressure ring to a clutch disengaged position.

3,627,090

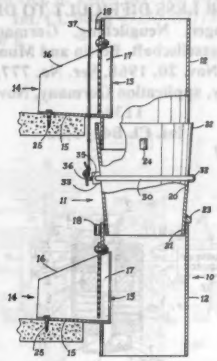
SECTIONAL REFUSE CHUTE FOR CONSTRUCTION SITES

Edward Earl Dickey, R.R. #6, Brampton, Ontario, Canada

Filed Nov. 18, 1969, Ser. No. 877,766
Claims priority, application Canada, Dec. 21, 1968, 38,461
Int. Cl. B65g *11/14;* **E04f** *17/12*
U.S. Cl. 193—34 **8 Claims**

A sectional sheet metal refuse chute, for use at a building site, which is adapted to be erected along side a building

under construction, and incorporating access hatchways at each floor level, and refuse funnel means for each hatchway, at least a part of the funnel means also providing the means of support for the refuse chute, and in which some of the sections are tapered from one end to the other so that they may telescope with other sections to accommodate variations in dimensions of buildings permitting the chute to be reused many times at different sites.

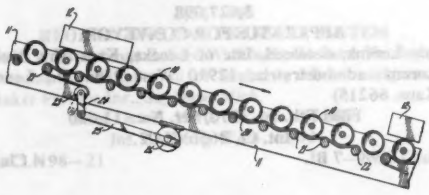


3,627,091

GRAVITY ROLLER CONVEYOR WITH PULSATING BAND BRAKE

Fred J. Fleischauer, Oakmont, Pa., and Theodore A. Hammond, Grand Haven, Mich., assignors to General Logistics Corporation, Oakmont, Pa., by said Fleischauer and Ermanco Incorporated, Grand Haven, Mich., by said Hammond

Filed May 5, 1969, Ser. No. 842,046
Int. Cl. B65g *13/00, 13/075*
U.S. Cl. 193—35 A **4 Claims**



A braking device for gravity roller conveyors is disclosed in which a flexible band is disposed against certain conveyor rollers to apply a self-energizing frictional braking force upon being tensioned by a powered cyclical tensioner for tensioning and releasing the band at predetermined periodical intervals.

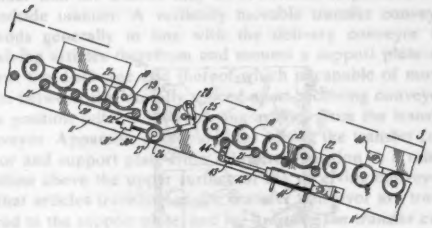
3,627,092

BRAKE FOR GRAVITY ROLLER CONVEYORS

Fred J. Fleischauer, Oakmont, Pa., and Theodore Hammond, Grand Haven, Mich., assignors to General Logistics Corporation, Oakmont, Pa., by said Fleischauer and Ermanco Incorporated, Grand Haven, Mich., by said Hammond, part interest to each

Filed May 5, 1969, Ser. No. 842,044
Int. Cl. B65g *13/00, 13/071, 13/075*
U.S. Cl. 193—35 A **5 Claims**

A brake for an accumulation gravity roller conveyor is disclosed in which a flexible band is disposed against certain individually rotatable conveyor rollers to apply a self-energizing frictional braking force upon being tensioned by a downstream triggering device.

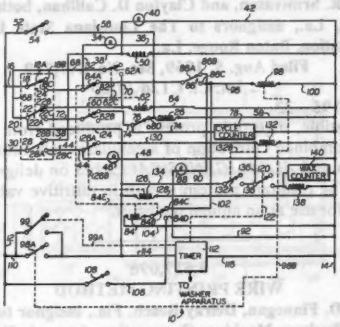


3,627,093

CONTROL HAVING MEANS DETECTING DEVICE TO BE WORKED ON

Harry Greenwald, Whitestone, N.Y., assignor to Greenwald Industries, Inc., Brooklyn, N.Y.

Filed Apr. 17, 1970, Ser. No. 29,484
Int. Cl. G07f *5/10*
U.S. Cl. 194—9 T **13 Claims**



Control apparatus for controlling the operation of a mechanism adapted to perform specified acts on an associated device comprising a coin responsive mechanism adapted to move from a rest to a first position upon the deposit of a first amount of money. Detecting means is actuated by the coin responsive mechanism when it moves to the first position to detect the presence of the device upon which the acts are to be performed. The detecting means actuates an operate means when the presence of the device is detected for operating the mechanism which performs the acts. Additionally, a homing device is provided which is responsive to the operation of the operate means to move the coin responsive mechanism back to the rest position so that additional amounts of money may be deposited in the coin responsive mechanism to move the coin responsive mechanism back to the first position.

3,627,094

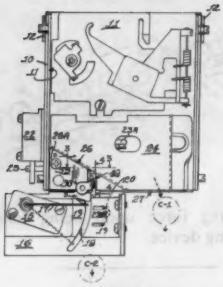
COIN CHUTE GUARD MEANS

Clarence D. Kaufman, Las Vegas, Nev.; Terrence A. Reedy, Jr., Skokie, and Joseph E. Lally, McHenry, Ill., assignors to Bally Manufacturing Corporation, Chicago, Ill.

Filed Dec. 16, 1968, Ser. No. 784,049
Int. Cl. G07f *3/02*
U.S. Cl. 194—97 **7 Claims**

The disclosure provides a form of unidirectional coin gate or blocking means at the lower coin exit in drop- or gravity-

type testing chutes so as to be situated at a point interposed between the chute exit and a closely proximate auxiliary



coin-handling device in order to block off any space in which a fraudulent tethered coin can be manipulated for repeated withdrawal and reentry into the auxiliary device.

3,627,095

NUTRITIVE PROTEIN FROM CELLULOSE

Vadake R. Srinivasan, and Clayton D. Callihan, both of Baton Rouge, La., assignors to The Louisiana State University Foundation, Baton Rouge, La.

Filed Aug. 5, 1969, Ser. No. 847,719

Int. Cl. C12d *13/00*

U.S. Cl. 195—33 **6 Claims**

Comestible, digestible protein is produced from cellulose by the combined cultivation of a cellulase-elaborating microorganism and *ALCALIGENES FAECALIS* on delignified cellulose. The resultant protein is high in nutritive value and is suitable for use as an animal feedstuff.

3,627,096

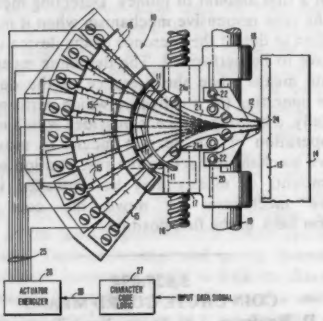
WIRE PRINTING METHOD

Edward D. Finnegan, Delray Beach, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 25, 1969, Ser. No. 819,369

Int. Cl. B41j *3/04*

U.S. Cl. 197—1 **5 Claims**



A printing method for use with a wire printer designed for improved printing of both higher and lower case alphabetical characters wherein additional printing points and positions are added to write better-formed characters, and especially to print improved characters having diagonally extending and curved segments.

3,627,097

KEY FOR A KEYBOARD WHICH MAY BE MADE MORE OR LESS DIFFICULT TO DEPRESS

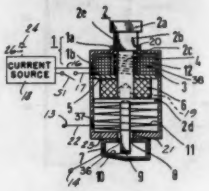
Hermann Plieninger, Neugilching, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Nov. 20, 1968, Ser. No. 777,298

Claims priority, application Germany, Nov. 29, 1967, S 113043

Int. Cl. B41j *5/22*

U.S. Cl. 197—107 **2 Claims**



A key for a keyboard such as is used in control stations for computers, teletypewriters, and other machines, in which keys are used to transmit or record intelligence, and which may have one or more selected keys that may be rendered difficult to press, which pressure is substantially more than the normal operating pressure of the keys. Each key is operatively associated with a magnetizable disc and a permanent magnet and an electromagnet which provide the biasing force so as to block the key. The key is also spring-biased so that it may initially be pressed for a first distance.

ERRATUM

For Class 198—177 see:
Patent No. 3,627,595

3,627,098

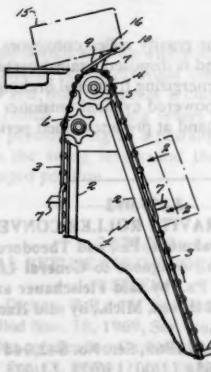
APPARATUS FOR CONVEYOR

Clyde Lorenz, deceased, late of Lenexa, Kans. (by Pauline Lorenz, administratrix, 12910 West 92nd St., Lenexa, Kans. 66215)

Filed Feb. 16, 1970, Ser. No. 11,620

Int. Cl. B65b *65/02*

U.S. Cl. 198—7 BL **4 Claims**



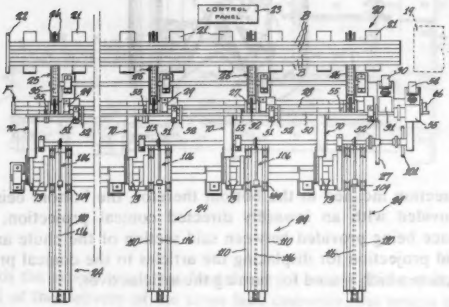
A conveyor having a shedder arm to lift material from carrier lugs or bars thus avoiding tearing or wrapping.

3,627,099

TRANSFERRING AND STACKING ELONGATED MEMBERS

James O. Shaffer, Canfield, Ohio, assignor to Wean Industries, Inc., Youngstown, Ohio

Filed Oct. 8, 1969, Ser. No. 864,805
Int. Cl. B65g 47/30, 57/18
U.S. Cl. 198—20 R 6 Claims



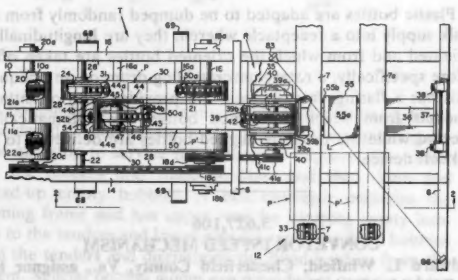
Elongated members, such as bars of metal, are removed from a runout table, and one or more bars are transferred to star wheel means which lift the bars, one at a time, and deposit them on inclined slide means, the bars slide down the slide means and are stacked on a vertically movable support in rows. The slide means has telescoping sections to compensate for disposition of the bars in rows and the support lowers automatically to deposit the stacked bars, in rows, on car means on which they are banded and delivered to a station for removal.

3,627,100

REORIENTING PAN TRANSFER SYSTEM

Gerald W. Bourbina; Robert W. Kluck; Richard Skarin, and Norman O. Krenke, all of Saginaw, Mich., assignors to Baker Perkins Inc., Saginaw, Mich.

Filed Oct. 5, 1970, Ser. No. 77,879
Int. Cl. B65g 47/26, 47/42
U.S. Cl. 198—21 15 Claims



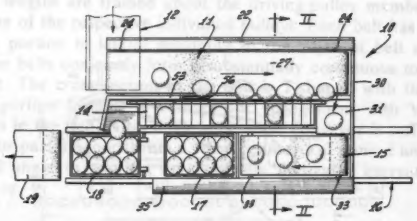
High-speed transfer apparatus for transferring articles, such as pans or pansets of dough which may be proceeding lengthwisely on an endless delivery conveyor, to a pair of laterally spaced-apart, parallel receiving conveyors, extending generally crosswisely to the delivery conveyor, in such a manner that the articles may be reoriented to proceed in a broadside manner. A vertically movable transfer conveyor extends generally in line with the delivery conveyor for receiving articles therefrom and mounts a support plate adjacent the discharge end thereof which is capable of movement between the laterally spaced-apart-receiving conveyors to a position suitable for receiving articles from the transfer conveyor. Apparatus is provided for raising the transfer conveyor and support plate from a lowered position to a raised position above the upper surface of the receiving conveyors so that articles traveling on the transfer conveyor are transferred to the support plate, and for lowering the transfer conveyor and support plate from the raised position to a lowered position to deposit the articles gently on the receiving conveyors.

3,627,101

CONVEYOR ARRANGEMENT FOR FEEDING ARTICLES IN DISCRETE AND BULK FASHION

Stanley A. McClusky, 3001 Baylor Ave., Bakersfield, Calif.

Filed Dec. 18, 1969, Ser. No. 886,210
Int. Cl. B65g 47/56
U.S. Cl. 198—22 15 Claims



A conveyor arrangement for transporting, separating, and feeding to a receptacle in discrete and bulk fashion articles such as cantaloupe or other readily turnable articles of fruit or produce. The conveyor arrangement includes a first conveyor for transporting articles in one direction, a second conveyor along side said first conveyor and moving discrete articles separated from the articles on the first conveyor in the opposite direction, and a third conveyor for moving the remainder of said articles. Means to transfer articles from said first conveyor to the second conveyor includes a wall with spaced openings disposed between said first and second conveyors for turning an individual article into an opening to cause transfer of the article into a pocket or recess on the second conveyor.

3,627,102

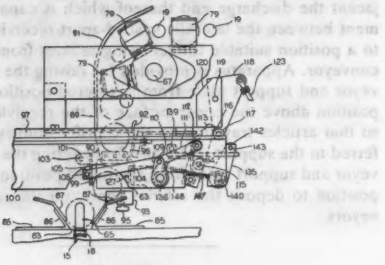
CONVERGER AND FEEDER FOR COOKIES FOR WRAPPING

Richard C. Talbot, Stokie, Ill., assignor to Peters Machinery Company, Chicago, Ill.

Filed Sept. 22, 1970, Ser. No. 74,418
Int. Cl. B65g 47/08, 47/26
U.S. Cl. 198—26 17 Claims

Apparatus for supplying cookies or other articles to be wrapped in side-by-side groups, and discharging the groups

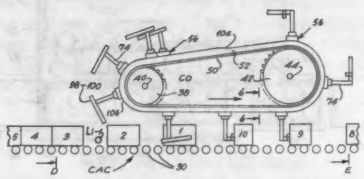
of articles onto a wrapping machine conveyor in succession where they are conveyed in separated relation relative to each other and in line to the wrapping machine, in a continuous operation without the use of manual labor.



3,627,103
CASE PALLETIZERS

John M. Leach, P.O. Box 341, Port Jefferson, N.Y.

Filed May 4, 1970, Ser. No. 34,201
Int. Cl. B65g *15/14, 47/24*
U.S. Cl. 198—33 AB **13 Claims**



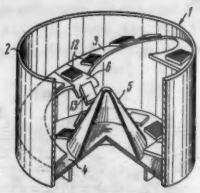
A palletizing machine and method which are particularly applicable to high-speed loading of cases in tiers on pallets or sheets in that every case received at the tiering operation and which requires repositioning is contacted by a case orienter and conducted to a scheduled relative position to ultimately form the desired tier or layer pattern without stopping forward motion of any part of any case at any time. In addition, the tiers so formed are alternately stacked without overhead suspension directly from the stripper plate onto two separate pallets or sheets.

3,627,104
DEVICE FOR SPATIAL ORIENTATION OF FLAT ARTICLES AND MEMBERS

Vasily Romanovich Verchenko, Leningradsky prospekt, 69, kv. 128; Valery Alexandrovich Ilichov, A-482 Korpus 342, kv. 133; Vladimir Konstantinovich Andrinanis, Bulvar Yana Raimisa, 18, Korpus 2, kv. 17; Vladimir Ivanovich Gorjunov, Belyaevo, and Mikhail Grigorievich Gavrin, Leninsky prospekt, 85, kv. 429, all of Moscow, U.S.S.R.

Filed Nov. 10, 1969, Ser. No. 875,117
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 AA **4 Claims**

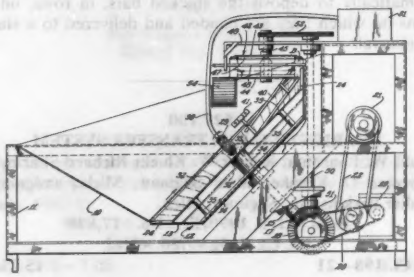
A device for the spatial orientation of flat members and other such articles which makes it possible to use the difference in the coefficients of friction of the surfaces of the articles to set the latter in positions in which the surface having a lower friction coefficient is directed upwards due to the fact that a helical chute mounted inside the vibrobunker has a section inclined to the bottom therefor, the bottom being provided with an inwardly directed conical projection, a space being provided between said section of the chute and said projection for displacing the articles to the conical projection which is used for turning the articles over.



3,627,105
PLASTIC BOTTLE UNSCRAMBLER

Donald T. Prodzenski, Glen Ellyn, Ill., assignor to Alpeda Industries, Inc., Golf, Ill.

Filed Oct. 6, 1969, Ser. No. 863,896
Int. Cl. B65g *47/26*
U.S. Cl. 198—33 **14 Claims**



Plastic bottles are adapted to be dumped randomly from a bulk supply into a receptacle wherein they are longitudinally oriented and from which the oriented bottles are taken off. More specifically, a rotary unscrambling drum on an oblique axis has a flaring, frustoconical rim provided with orienting pockets from which misaligned bottles are automatically ejected while the properly aligned bottles are delivered to a takeoff device.

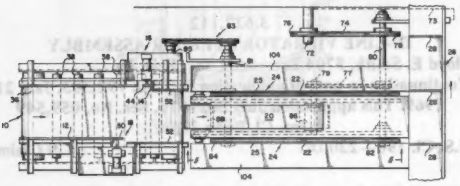
3,627,106
CONVEYOR INFEED MECHANISM

Edward L. Winfield, Chesterfield County, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed July 29, 1969, Ser. No. 845,801
Int. Cl. B65g *47/26*
U.S. Cl. 198—34 **10 Claims**

An apparatus for feeding articles from one conveyor means to another conveyor means at right angles thereto. Ar-

ticles are initially guided while being fed on a line conveyor into engagement with a protruding stop abutment producing a backlog of articles. In timed sequence, an article is released by escapement or article release means such as opposed pneumatic cylinders which move an article transversely on the line conveyor without skewing. A released article is fed by an overlap conveyor means to a feed finger means which



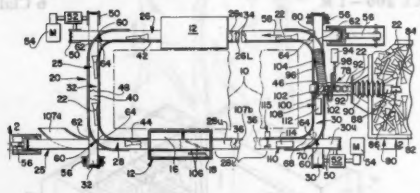
feeds the article to a cross feed conveyor means. Toward the end of the delivery of the cross feed conveyor, the article is decelerated. Means are provided for maintaining the feed fingers substantially vertical even as they pass over a forward sprocket adjacent the crossfeed conveyor. The apparatus permits the line conveyor, the overlap conveyor and a feed finger conveyor to advance continuously while the crossfeed conveyor advances intermittently.

3,627,107

BOBBIN-MONITORING SYSTEM

Frank C. Di Mauro, Providence, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed Oct. 6, 1969, Ser. No. 863,858
Int. Cl. B65g *47/26*
U.S. Cl. 198—34 **23 Claims**



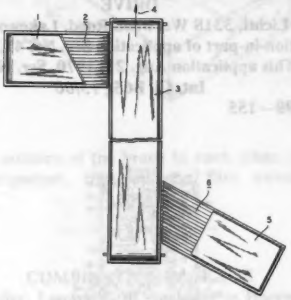
A bobbin-handling system for a self-tending spinning frame is disclosed. Tenders move back and forth along spinning stations and stop to service the stations as required. For example, the tenders doff filled bobbins, and then donn and thread-up empty bobbins. A belt conveyor encircles the spinning frame and has upper runs for carrying empty bobbins to the tenders and lower runs for receiving filled bobbins from the tenders and discharging the filled bobbins from the system. Special bobbin guides are provided at corners where the conveyor belts cross each other. Empty bobbins are automatically spaced from each other as they are delivered to the conveyor and apparatus is provided for automatically maintaining adequate spacing of the bobbins after they are delivered to the conveyor.

3,627,108

ANGULAR CONVEYOR

Kenneth P. Hansen, 62 Belmont Ave., Plainview, N.Y.

Filed Dec. 4, 1969, Ser. No. 882,090
Int. Cl. B65g *37/00*
U.S. Cl. 198—102 **7 Claims**



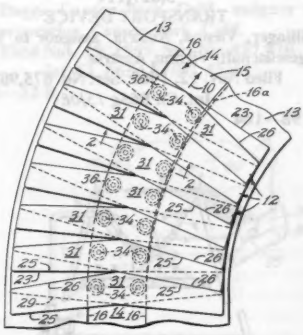
An angular conveyor comprises a bed structure of substantially trapezoidal shape with one side at right angles to the two parallel sides, the fourth side extending relative to the third side at an angle which corresponds to the desired angular change in conveying travel. An axially elongated multiple driving pulley is rotatable along the third side, and individual belt pulleys are rotatable along the fourth side independently of each other. Endless conveyor belts of respectively different lengths are trained about the driving-pulley member and one of the respective individual pulleys. Each belt has a flattop portion in lateral proximity to the adjacent belt so that the belts conjointly form a substantially continuous top surface. The cross section of the belt is T-shaped with the lower portion forming a V-shape for engagement with V-grooves in the pulleys. A single such angle conveyor is sufficient for passing goods from a fixed counter top around any desired angle to another longitudinally undivided carryoff conveyor.

3,627,109

CONVEYOR CONSTRUCTION

Richard E. Cabak, 3295 Golden Orchard Drive, Mississauga, Ontario, Canada

Filed Sept. 19, 1969, Ser. No. 859,475
Int. Cl. B65g *15/00*
U.S. Cl. 198—137 **10 Claims**



A conveyor includes a series of connected overlapping plates capable of traveling along a tortuous path which may be curved about a vertical axis. The plates are equipped with frustoconical rollers having their larger diameters lowermost

and pivotally supported to the plates on generally vertical axes. A channel-shaped track has a wall shaped to the contour of the rollers to maintain the conveyor in place and reduce friction.

3,627,110

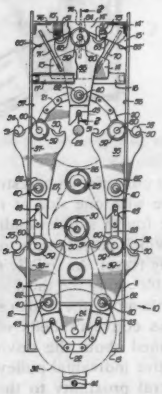
TOP PICKUP TRANSFER GUIDE FOR ENDLESS CHAIN DRIVE

Robert D. Lichti, 3318 Warwood Road, Lakewood, Calif.

Continuation-in-part of application Ser. No. 47,764, June 19, 1970. This application Aug. 21, 1970, Ser. No. 065,862

Int. Cl. B65g *15/00*

U.S. Cl. 198—155 **7 Claims**



A series of work arms are pivotally mounted on a chain drive and each has a pair of vertically spaced flanged wheels which roll against vertical track elements to hold the work arm erect as it lifts or lowers a load carried by a supporting cradle offset relative to the center of the work arm. Upper transverse track elements guide the upper wheel as it passes from one side of the chain drive to the other. To prevent the upper wheel, for example, from slipping back the wrong way during the crossover, a stop is located on each side of the center in positions where they will engage respective cradles so that, should the work arm tend to tilt too far from a vertical orientation, it will be prevented from doing so by engagement of one or the other cradle with its respective stop.

3,627,111

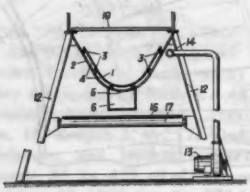
TRANSPORT DEVICE

Bruno Hillinger, Vienna, Austria, assignor to Waagner-Biro Aktiengesellschaft, Vienna, Austria

Filed Nov. 12, 1969, Ser. No. 875,987

Int. Cl. B65g *15/08*

U.S. Cl. 198—184 **14 Claims**



A transport device for transporting bulk goods. The device includes an endless belt having an upper load-carrying run. This upper run of the belt is situated within an elongated trough. Within the trough the upper run of the belt is supported longitudinally of the trough on rails. A source of fluid under pressure, such as a source of compressed air, communicates with the interior of the trough to supply an air cushion beneath the belt with the compressed air which forms the cushion being limited laterally by the rails. The pressure of the gas of the air cushion is greater than atmospheric pressure so that the rails themselves are substantially unloaded, enabling the belt to travel along the rails with very little friction.

3,627,112

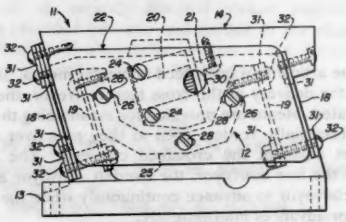
IN-LINE VIBRATORY FEEDER ASSEMBLY

Floyd E. Smith, 5704 Brewster Lane, Erie, Pa.

Continuation-in-part of application Ser. No. 792,303, Jan. 21, 1969. This application July 30, 1970, Ser. No. 059,549

Int. Cl. B65g *27/00*

U.S. Cl. 198—220 DC **9 Claims**



An in-line vibratory feeder having means for adjusting the coil-armature gap in the field under operating conditions to maximize the feed rate and vibratory amplitude.

3,627,113

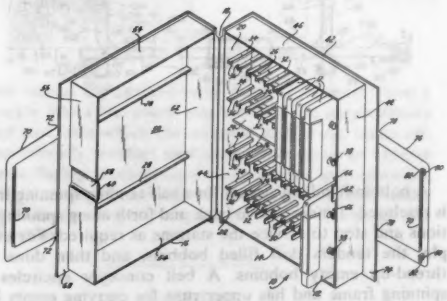
CASSETTE STORAGE AND CARRYING CASE

Albert A. Di Ioia, Huntington Valley, Pa., assignor to Walco-Linck Corporation, Clifton, N.J.

Filed Feb. 19, 1970, Ser. No. 12,752

Int. Cl. A45c *11/00;* **B65d** *25/28, 85/54, 81/00*

U.S. Cl. 206—1 R **6 Claims**



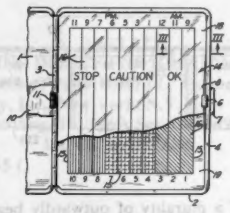
A carrying case for a plurality of cassette type magnetic tape units in which the case has two hinged portions and means for interlocking the two portions together. A series of guides with retainers thereon are provided for holding the cassettes in place.

3,627,114

CIGARETTE CASE FOR LIMITING SMOKING

Nicholas C. Mitchell, 996 Balmoral Drive, Pittsburgh, Pa.

Filed Nov. 12, 1969, Ser. No. 875,941
Int. Cl. A24f *15/12*
U.S. Cl. 206—41 A 5 Claims



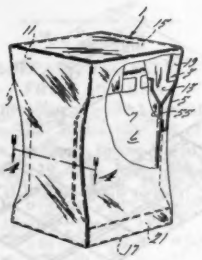
A hinged cigarette case is provided in its bottom section with a retaining bar that is hinged at one end to the case and is urged by a spring toward the bottom section to hold a row of cigarettes in place. Fitting in the bottom section is a chart provided with a plurality of spaced parallel lines extending lengthwise of it. The spaces between the lines correspond in number to the number of cigarettes the case is designed to hold and each has substantially the same width as a cigarette. The chart also is provided with a series of numbers at one end of the spaces designating predetermined hours of the day, whereby each cigarette in the case is designated by the hour it is to be removed from the case for smoking.

3,627,115

TRANSPARENT FILTER PACKAGE

Eugene J. Samalon, Racine, Wis., assignor to Tenneco Inc., Racine, Wis.

Filed June 16, 1969, Ser. No. 833,589
Int. Cl. B65d *5/04, 5/50, 65/16*
U.S. Cl. 206—45.14 9 Claims



A package for a throwaway oil filter has a housing with open front and back faces and reinforced sides which is formed from a one-piece folded blank and wrapped with a transparent plastic shrink film.

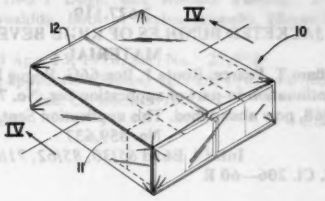
3,627,116

SHRINK WRAPPED PACKAGE

John Paul Cooper, Wilton, Conn., assignor to Borden Inc., New York, N.Y.

Filed Dec. 18, 1969, Ser. No. 886,428
Int. Cl. B65d *65/16*
U.S. Cl. 206—45.33 4 Claims

A package composed of a single rectangular sheet of corrugated pasteboard providing a pair of juxtaposed compartments, the package construction includes a bottom wall, upstanding end walls and a top wall, the top wall being defined by the free ends of the pasteboard sheet disposed in overlapping relation over said brace; at least one integral upright brace formed by folding sections of the bottom wall; means



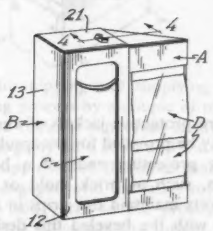
for securing sections of the brace to each other; and a heat-shrunk, transparent, thermoplastic film enveloping the package.

3,627,117

COMBINATION PACKAGE

Jerry B. Giesler, Lombard, Ill., assignor to Hoerner Waldorf Corporation, Ramsey, Minn.

Filed June 19, 1970, Ser. No. 47,644
Int. Cl. B65d *25/00*
U.S. Cl. 206—47 R 10 Claims



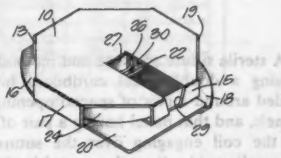
An attachment for a carton is provided which is designed to support a second product or premium or which may merely provide added display space. Connecting flanges are provided at the top and bottom edges of the attachment which overlap, and are secured to, the top and bottom closures of the carton to hold a display panel substantially flush with a carton wall.

3,627,118

RIBBON CARTRIDGE

Robert W. Daggs, Canoga Park, Calif., assignor to General Ribbon Corporation, Canoga Park, Calif.

Filed Nov. 19, 1969, Ser. No. 877,970
Int. Cl. B65d *83/00, 85/67*
U.S. Cl. 206—52 R 8 Claims



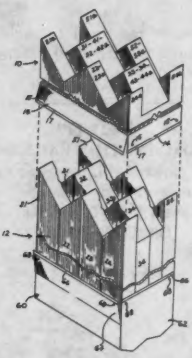
A low-cost cartridge constructed from folded box board or the like for typewriter ribbon and similar articles. The cartridge permits handling of the ribbon and insertion into the machine without the operator's hands coming into contact with the ribbon. The unique manner in which the cartridge is folded from the box board permits it to secure the ribbon as

well as the core inside the cartridge and this is accomplished with a single fastening means.

3,627,119
JACKETED BUNDLES OF RIGID BEVELED STRIP MATERIAL

William T. Pearce, Route 1, Box 66G, Rogue River, Oreg.

Continuation-in-part of application Ser. No. 749,669, Aug. 2, 1968, now abandoned. This application Sept. 22, 1969, Ser. No. 859,637
Int. Cl. B65d *85/30, 85/62, 71/00*
U.S. Cl. 206—60 R **7 Claims**

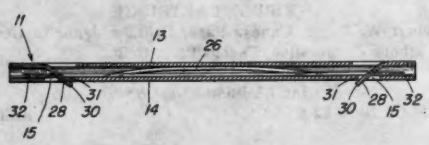


One or more protective jackets of cushioning and confining plastic may be provided for encapsulating and keeping in order sharply projecting ends of a bundle of bevel cut wooden strips, such as brick mold or fence pickets. The jacket or jackets maintain the strips in an orderly, compact arrangement, with the beveled tips desirably disposed in a common plane.

3,627,120
SUTURE PACKAGE

Robert L. Bordeau, Staunton, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Sept. 8, 1969, Ser. No. 856,087
Int. Cl. A61l *17/02*
U.S. Cl. 206—63.3 **8 Claims**

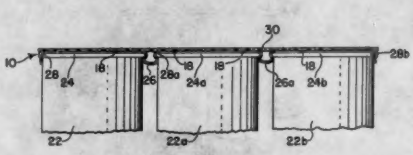


A sterile suture package and method of assembling it comprising a double-panel cardboard holder with the suture coiled around a pair of spaced openings in a first one of the panels, and that panel having a pair of tabs, one at each side of the coil engaging over the suture strands at the corresponding side, the other panel having a pair of tabs complemental respectively to the holes in the first panel each tab being adapted to be pushed through the corresponding hole in the first panel and being positioned and shaped to extend beyond the edge of the hole and interlock releasably the two panels together until use of the suture when the folded panels are opened and the coiled suture exposed for progressive withdrawal.

3,627,121
COVERED TOP CONTAINER CARRIER

Raymond E. Deasy, Mt. Prospect, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jan. 5, 1970, Ser. No. 582
Int. Cl. B65d *71/00;* **B66f** *19/00*
U.S. Cl. 206—65 C **5 Claims**

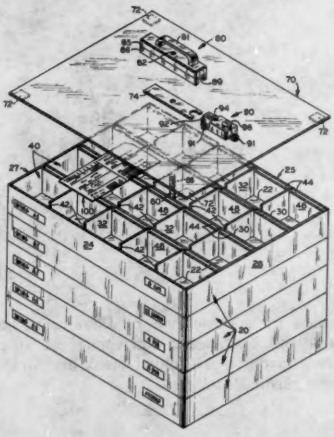


A package of a plurality of outwardly beaded or chimed containers, such as cans, each mounted within a corresponding aperture of an apertured plastic carrier sheet member with the carrier material round each aperture supportingly engaging beneath the bead at the top of an inserted container and also enveloping the sides of the bead to present exposed carrier material thereabove, preferably overlying the top of the bead, so as to permit ready conversion of the thusly formed open top package unit to a closed top package unit by application of a flat protective cover sheet to the package unit and adhering the same to the exposed carrier material without manipulative deformation of the cover sheet.

3,627,122
SYSTEM AND APPARATUS FOR THE ADMINISTRATION OF DRUGS

Robert Richard Garbe, Jr., 4778 Maize Road, Columbus, Ohio

Filed June 1, 1970, Ser. No. 41,811
Int. Cl. B65d *71/00, 1/34*
U.S. Cl. 206—65 R **14 Claims**



Special drug-carrying trays and associated equipment for pharmacists and nurses for the administration of drugs to a plurality of patients, such as in hospitals or nursing homes, comprising the separate packaging, sealing, and labeling of each drug dose for each patient and arranging these individually packaged drugs in compartments in such trays. These compartments correspond to each room or bed and are labeled to correspond to each patient and each dose to be administered with separate trays being used for different dose times. These trays have specifically designed compartments for retaining the labels and drugs during transport, and

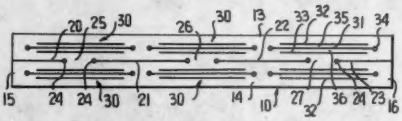
for nesting and locking stacks of them together for transport between the pharmacy and the nursing facility. Thus the pharmacist prepares the trays and delivers one or more stacks of them to one or more nursing facilities all ready for the nurses to check and administer directly to their patients. This system also includes a form, slip, or card for checking the drugs, which form may be adapted for direct computerized billing.

3,627,123

CARRYING DEVICE FOR GROUPS OF CANS

Richard G. Wachter, Palos Hills, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Aug. 13, 1969, Ser. No. 849,640
Int. Cl. B65d *71/00*
U.S. Cl. 206—65 C 10 Claims



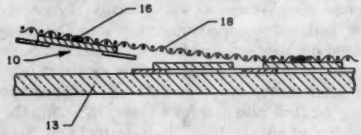
This disclosure relates to a carrying device for groups of cans, and particularly a normally planar rectangular plastic strip which is provided with a plurality of cut lines along its longitudinal centerline, and pairs of transverse cut lines on opposite sides of the longitudinal centerline for forming openings which receive and snugly grip each can beneath its double seam. The carrying device is particularly adapted for association with necked-in cans, and for this purpose a pair of narrow bands are formed adjacent each opening for snugly surroundingly engaging the necked-in portions of each of the cans.

3,627,124

METHOD FOR SEPARATING SELECTED ARTICLES FROM AN ARRAY

Peter R. Hance, Allentown; Ronald I. Strohl, Walnutport, and William R. Wanesky, Wescosville, all of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Jan. 29, 1970, Ser. No. 6,678
Int. Cl. B07b *13/00*
U.S. Cl. 209—45 7 Claims



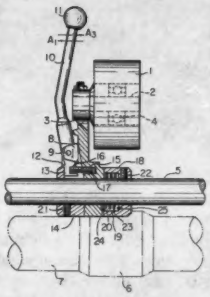
A method for separating defective beam-lead semiconductor devices from an array of devices cemented by wax to a substrate. The devices are tested, the defective ones marked with epoxy ink, the array covered with a screen, the ink cured to fasten the defective devices to the screen, the wax melted and the screen removed to simultaneously separate all the defective devices from the array.

3,627,125

APPARATUS FOR NIPPING AND SUPPLYING ONE OR MORE YARNS TO THE PROCEEDING PROCESS

Hideo Sugino, 18-2-1 Dogo, and Hiroshi Yamada, 2901, Oaza-minamiyoshida, both of Matsuyama-shi, Ehime-ken, Japan

Filed Apr. 13, 1970, Ser. No. 27,958
Claims priority, application Japan, Apr. 15, 1969, 44/34585
Int. Cl. B65h *17/20*
U.S. Cl. 226—90 4 Claims



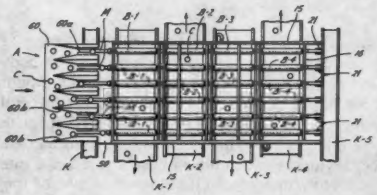
In an apparatus for nipping and supplying one or more yarns to a proceeding process by a couple of rollers engaged with each other. One roller is supported freely rotatably by an arm mounted swingably on a shaft and the other roller is always rotated and supported by the other shaft. The former roller is easily kept engaged with the latter roller during the operation to supply said yarns to the proceeding process, while during out of the operation the former is easily kept disengaged with the latter not to supply said yarns to the proceeding process.

3,627,126

APPARATUS FOR SIZING CANTALOUPES AND OTHER GENERALLY ROUND OBJECTS

John R. Fitzgerald, and Lloyd E. Allen, both of Cameron County, Tex., assignors to Tri-Pak Machinery Service, Inc.

Filed Jan. 9, 1970, Ser. No. 1,697
Int. Cl. B07c *5/06*
U.S. Cl. 209—91 7 Claims

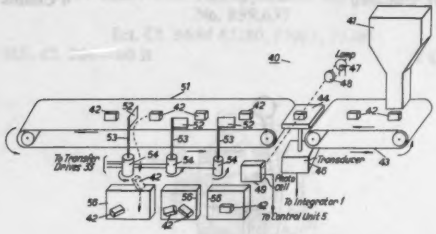


Apparatus for separating cantaloupes or other generally round objects into groups according to size so that each separated group has objects within a predetermined size range, and wherein such sizing is accomplished with substantially no bruising, peeling or other damage to the cantaloupes or other objects.

3,627,127
SORTING APPARATUS

Scott Cunningham Whiteford, Highscape, Bayleys Hill, Nr. Sevenanks, Kent, Croydon, England

Filed Dec. 9, 1969, Ser. No. 883,423
Int. Cl. B07c 5/16
U.S. Cl. 209—121 8 Claims

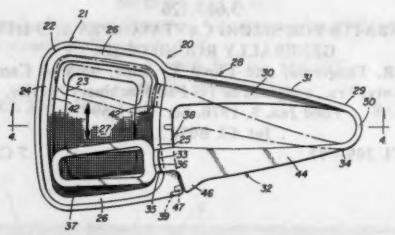


The invention relates to a channelizer or apparatus for sorting articles such as prepacked foodstuffs into channels each characterized by an individual weight band. The apparatus of the invention includes a weighting unit that weighs each article and produces information significant of the article weight that is transferred step by step through a train of preset registers storing channel weight band information until the transferred information agrees with the stored information. This agreement is effective to cause transfer of the article to the channel to which the stored information relates.

3,627,128
SIFTER

Efrem M. Ostrowsky, Highland Park, Ill., assignor to Nibot Corporation, Chicago, Ill.

Filed Jan. 23, 1969, Ser. No. 793,508
Int. Cl. B07b 1/02
U.S. Cl. 209—236 5 Claims

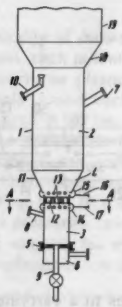


A sifter for use in connection with the sifting of flour or other powdered materials including an annular body defining a chamber open at the ends thereof, a screen mounted in the chamber adjacent one end thereof, a handle integral with the opposing end of the body, an arm spaced from the handle and including a sifter blade extending from one end thereof disposed within the chamber in use and a hinge integral with and resiliently interconnecting the other end of the arm and the outer end of the handle, and accommodating movement of the arm from an as-molded position with the blade disposed outside of the chamber to a rest position with the blade disposed within the chamber adjacent a wall thereof opposite the handle, and further accommodating movement from the rest position to an operated position adjacent the opposing wall of the chamber whereby material disposed within the chamber upon the screen may be sifted therethrough by movement of the blade from the rest position thereof to the operated positions thereof.

3,627,129
PROCESS AND APPARATUS FOR THE SEPARATING OUT OF COARSE AND/OR HEAVY PARTICLES FROM A VARIABLE PARTICLE SIZE AND/OR VARIABLE PARTICLE WEIGHT MIXTURE OF GRANULAR SOLIDS MAINTAINED IN A FLUIDIZED STATE

Rainer Hartmann, Frankfurt am Main; Oskar Dorschner, Bad Homburg, and Hans-Werner Gross, Buchschlag, all of Germany, assignors to Metallgesellschaft A.G., Frankfurt, Germany

Filed Jan. 21, 1969, Ser. No. 792,682
Claims priority, application Germany, Jan. 24, 1968, P 16 07 648.5
Int. Cl. B07b 3/02
U.S. Cl. 209—474 15 Claims



Elutriation apparatus and process using apparatus comprising an upper and a lower member separated by a restricted intermediate cross section member wherein the lower member has a lesser cross section than the upper member. The process is carried out by operating the lower member as a dispersed suspension (known per se) elutriation apparatus and by operating the upper member as a dense fluidized bed (known per se) elutriation apparatus with the intermediate member causing an increase in the velocity, of at least 1.2 times, of the elutriant passing therethrough from the lower to the upper members.

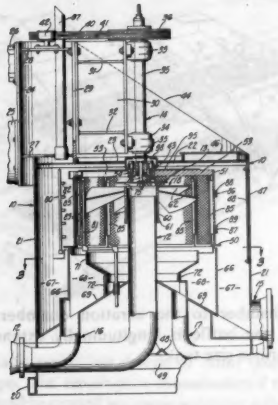
3,627,130
WASTEWATER CONCENTRATION METHOD

Walter J. Talley, Jr., Brentwood Park, and Howard W. Wright, Jr., San Gabriel, both of Calif., assignors to Sweco, Inc., Los Angeles, Calif.

Filed June 1, 1970, Ser. No. 42,100
Int. Cl. B01d 21/26
U.S. Cl. 210—78 9 Claims

There are disclosed herein equipment and methods for screening and concentrating wastewater overflow from combined sewer systems. Exemplary equipment includes a separator employing a substantially cylindrical rotating screen. Influent is piped upwardly into the equipment and deflected outwardly toward the inner surface of the screen in a manner to achieve a desired flow rate and flow pattern of the influent onto the screen. Means are provided for controlling the flow rate and for suitably directing the influent in a plurality of substantially discrete inclined streams toward the inner surface of the rotating screen. The screen is rotated at a speed to achieve a desired centrifugal force. Effluent passes through the screen to an outlet and the remaining concentrate passes to an outlet. A certain amount of the influent splashes from the inner surface of the screen, and is received by a backsplash pan and may be recirculated and rescreened. The screen is in the form of a screen cage having a plurality of removable screen panels for facilitating replacement of damaged screens or changing of screen type or mesh size. Cleaning means is provided for directing a cleaning fluid periodically at the screen. The methods disclosed involve the

manner in which the influent, effluent, concentrate and backsplash are handled, and the manner in which the influent is screened to achieve a fluid concentrate which is pumpable



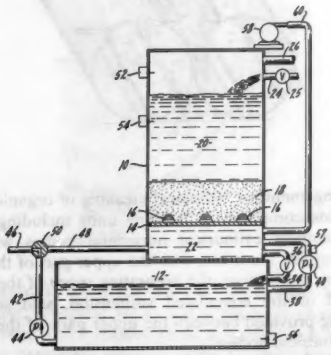
to other treatment equipment for ultimate disposal. Additionally, a sequence of influent feed and screen cleaning is described.

3,627,131

METHOD AND APPARATUS FOR FILTERING SOLIDS FROM LIQUIDS

Brian L. Goodman, Overland Park, Kans.; Frank G. Weis, Kansas City, Mo., and Kenneth A. Mikkelson, Overland Park, Kans., assignors to Ecodyne Corporation, Chicago, Ill.

Filed Jan. 31, 1969, Ser. No. 795,541
Int. Cl. B01d *23/24*
U.S. Cl. 210—82 **2 Claims**



In removing suspended solids from a liquid in a filter tank containing a filter bed and forming an underdrain compartment beneath the bed, liquid is passed downwardly through the filter bed while maintaining a pressure head above the bed. Intermittently, liquid is pumped from the underdrain compartment to increase the flow through the filter bed when the pressure head increases above a predetermined maximum level. Preferably, this pumping is halted when the pressure head drops below a predetermined minimum level.

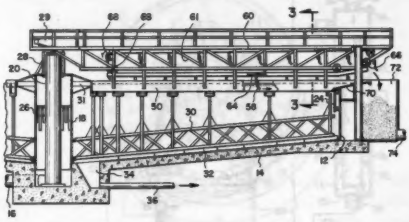
Apparatus which may be employed to carry out the method comprises a filter tank having a filter bed separating it into an upper inlet compartment and a lower underdrain compartment. Sensing means are provided for sensing a predetermined maximum liquid level in the inlet compartment, and suction means communicate with the underdrain compartment for withdrawing liquid at an increased rate. The suction means are activated by the liquid in the inlet compartment rising to the maximum level. In the preferred embodiment, upper and lower sensing means are provided, and the suction means are deactivated by the liquid reaching a predetermined minimum level according to the position of the lower sensing means.

3,627,132

SCUM-SKIMMING METHOD AND APPARATUS

Earl M. Kelly, Hillsborough, Calif.; Jack W. Pratt; Ralph B. Haymore, both of Salt Lake City, and Jay M. Smith, Bountiful, all of Utah, assignors to Envirotech Corporation, Salt Lake City, Utah

Filed Oct. 30, 1969, Ser. No. 872,517
Int. Cl. B01d *21/06*
U.S. Cl. 210—83 **13 Claims**



Scum removal apparatus and method, including a biased skimming blade mounted to span the surface of a confined liquid body and to move toward a baffle positioned in the path of the approaching blade to block and, thereby collect the scum pushed ahead of the blade. A cam, located ahead of the baffle, depresses the approaching blade to disengage it from the scum so that it passes below the baffle, leaving the collected scum deposited in front of the baffle.

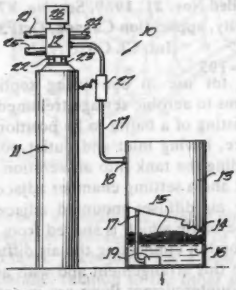
In a particular modification, a two-sided channel is formed by parallel baffles, the cam is formed as a ramp coextensive with the entire lower edge of the first baffle and extending upwardly therefrom to terminate above the liquid surface. The moving blade is depressed as it follows the ramp, thus forcing the scum under the first baffle, whence it is released to refloat within the channel. In both modifications, the collected scum is engaged by a supplemental high capacity conveyor which moves the scum radially of the tank to discharge.

3,627,133

CHLORINE GENERATOR FOR WATER SOFTENERS

Stanley F. Rak, Mundelein, Ill., assignor to Culligan International Company, Northbrook, Ill.

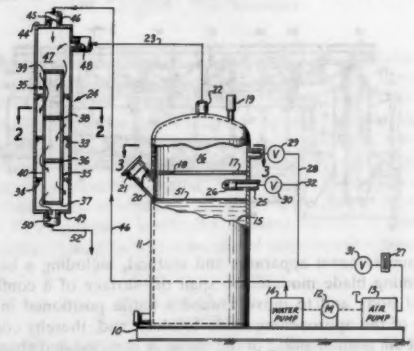
Filed Mar. 16, 1970, Ser. No. 20,000
Int. Cl. B01d *35/06, 23/26*
U.S. Cl. 210—98 **10 Claims**



A chlorine generator to be inserted in the brine flow line between a water softener unit and a brine tank providing

brine regenerant for the softener to sanitize the water softener simultaneously with the regeneration cycle for the exhausted water softener material. The chlorine generator includes a cell inserted in the brine flow line so that the brine flows therethrough when being educted to the water softener, a pair of electrodes formed of inert material in the cell contacting the brine, and a control circuit for supplying current flow to the electrodes and actuated by suitable means upon initiation of the softener regeneration cycle.

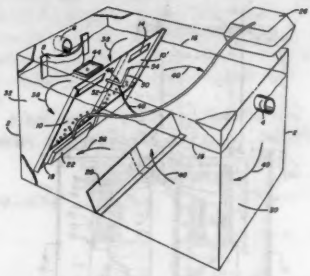
3,627,134
WATER TREATMENT DEVICE
Arvel H. Mattson, W. Covina, Calif., assignor to Chemical Corporation, Santa Fe Springs, Calif.
Filed Nov. 12, 1969, Ser. No. 875,854
Int. Cl. C02b *1/18*
U.S. Cl. 210—192 **5 Claims**



Apparatus for burning sulfur under a forced air draft to produce gaseous sulfur dioxide which is then introduced into a mixing system where the sulfur dioxide is dissolved in a continuing flow of irrigation water to acidify the water. The treated water is then added to a greater flow of irrigation water to increase the effectiveness of the irrigation water in soaking into soil to greater depths and to chemically leach undesirable minerals from the soil such as salt. The sulfur is burned in a two-zoned tank having a sealable lower burning chamber fed with metered air for combustion and an upper gas collection chamber in which the gaseous products of combustion are mixed with additional air and from which they are piped to a mixing chamber for solution in water which is then pumped to the irrigation water.

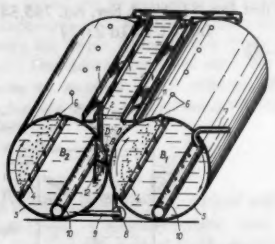
3,627,135
SEPTIC TO AEROBIC SEWAGE TREATMENT CONVERSION APPARATUS
Gerald J. Goodman, Chomedey, Laval, Canada, assignor to Air Gest International Corp., Montreal, Quebec, Canada
Filed Nov. 21, 1969, Ser. No. 878,844
Claims priority, application Canada, Oct. 31, 1969, 066372
Int. Cl. C02c *1/12*
U.S. Cl. 210—195 **7 Claims**

Apparatus for use in converting septic bacterial-action sewage systems to aerobic sewage treatment systems. The apparatus consisting of a baffle to be positioned within a septic tank structure, having inlet and outlet ports, in an inclined position dividing the tank into an aeration chamber adjacent the inlet port and a settling chamber adjacent the outlet port. At least one air diffuser mounted adjacent the lowermost portion of the baffle which is spaced from the bottom of the tank and a conduit connecting the air diffuser to an air compressor. With this arrangement and with air issuing from the air diffuser countercurrent flows are imparted to the sewage in the aeration and settling chambers whereby continuous and complete aeration and mixing of the sewage in the tank is accomplished. In further aspect the baffle is provided with structure for returning scum from the surface of the liquid in



the settling chamber to the aeration chamber, and in a further aspect the baffle is longitudinally extensible to accommodate various size tanks.

3,627,136
ARRANGEMENT FOR BIOLOGICAL CLEANING OF ORGANICALLY POLLUTED LIQUIDS COMPOSED OF BUILDING UNITS
Svatopluk Mackrle, Brno, and Vladimir Mackrle, Praha, both of Czechoslovakia, assignors to Ceskoslovenska Akademie ved, Praha, Czechoslovakia
Filed July 1, 1970, Ser. No. 51,471
Claims priority, application Switzerland, July 10, 1969, 10698/69
Int. Cl. B01d
U.S. Cl. 210—201 **6 Claims**



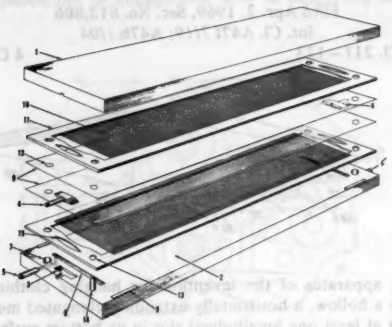
An arrangement for biological cleaning of organically polluted liquids composed of building units including at least two substantially cylindrical horizontal bodies which are placed alongside the other, with the upper part of their mantles forming the bottom of a separating space of the cleaned liquid and of the coagulated suspension, said separating space being provided between the upper parts of the mantles of said cylindrical bodies.

The cylindrical bodies communicate with each other, one of the bodies communicates with the separating space which has a trough to discharge clarified liquid.

3,627,137
DIALYZING MEMBRANE ENVELOPE
Milan Bier, 5341 East 7th St., Tucson, Ariz.
Filed Oct. 10, 1968, Ser. No. 766,592
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **21 Claims**

A parallel flow dialyzer suitable for use as an artificial kidney utilizes a dialyzing membrane envelope spread within and sealed to an outer frame. This membrane envelope may comprise plastic netting which provides the necessary support for the membranes and channels for the flow of dia-

lyzate, while at the same time causes some mixing of blood, thus improving on the performance of the dialyzer. It also



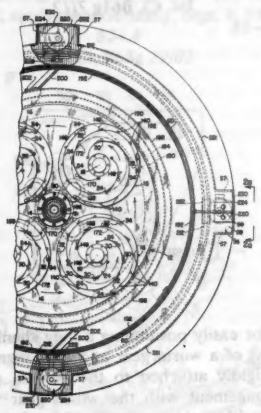
permits greatly simplified design of outer boards containing said envelope. The envelope is manufactured mainly through the use of double-coated pressure-sensitive adhesive tape.

3,627,138

CENTRIFUGAL SEPARATOR

William H. Peck, Tulsa, Okla., assignor to Centrifugal Separators, Inc., Tulsa, Okla.

Filed July 23, 1970, Ser. No. 57,533
Int. Cl. B01d *33/00*
U.S. Cl. 210—325 **24 Claims**



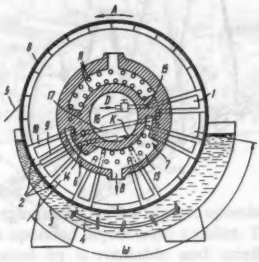
A centrifugal separator for the three-phase removal of clear liquid, semiclear liquid and solids from slurry. A high-speed carrier which rotates about a vertical axis carries two or more eccentrically disposed slurry-receiving baskets which are individually rotatable at low speed about their respective vertical axes, the carrier and baskets presenting a balanced arrangement. A spiderlike manifold which has radial distribution channels and rotates with the carrier deposits slurry in the central region of each basket where it is flung outwards under the influence of the centrifugal force that is exerted by the carrier, and in so moving it encounters one at a time the concave sides of a series of nested involute imperforate spiral carrier-mounted vanes at such times as these vanes assume outer ecliptic positions with respect to the central axis of the carrier and the orbiting axes of the baskets. The vanes function as individual centrifuge units and in the manner of pouring cups which restrain the slurry against outward movement long enough to effect radial settling of the solids toward the concave sides of the vanes. During such radial settling, the less dense material or clear liquid is drawn off through the bottom walls of the baskets at inner radial regions, the denser or semiclear liquid containing solids that have not yet achieved separation is similarly drawn off at outer radial regions, while the remaining solids from which most of the liquid has been removed, are discharged over the receding or trailing edges of the vanes where they are flung radially from the baskets as well as from the carrier.

3,627,139

CONTINUOUS DRUM VACUUM FILTER

Nikolai Alexandrovich Burtsev, ulitsa Dagestans Kaya 20, kv. 12, Sverdlovsk, U.S.S.R.

Filed June 22, 1970, Ser. No. 48,106
Int. Cl. B01d *35/22*
U.S. Cl. 210—393 **2 Claims**



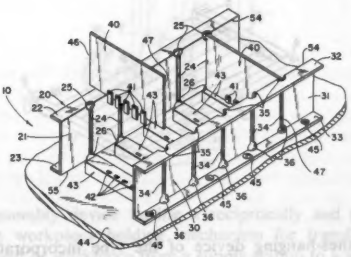
A continuous drum vacuum filter wherein the drum, rotatable about its axis, has on its working surface cells whose external sides are formed by a filtering material. The cells are connected by means of ducts to the movable part of a valve installed coaxially with the drum and serving to connect the cells in the required sequence to suction and compressed air lines during rotation of the drum. The fixed part of the valve has an overflow channel so ensuring communication of a cell emerging from the suspension with a cell submerging into the suspension that overflowing of the filtrate from the former cell to the latter is ensured.

3,627,140

PRINTED CIRCUIT CARD RACK

Florian F. Yanikoski, Braintree, Mass., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 18, 1970, Ser. No. 38,090
Int. Cl. A47g *19/08*
U.S. Cl. 211—41 **4 Claims**



A rack for supporting a plurality of printed circuit cards in vertically stacked relation is formed by a pair of plates having U-shaped cross sections. Each plate has a wall member arranged in spaced-parallel relation to the other such member and a pair of outwardly turned flange members. Both wall members have a series of guide slots cut therethrough which

are correspondingly paired and vertically aligned for slidably receiving opposite ends of the individual cards. The guide slots have enlarged opposite ends that respectively define a series of apertures which communicate with the flange members in a manner facilitating receipt of the cards.

3,627,141

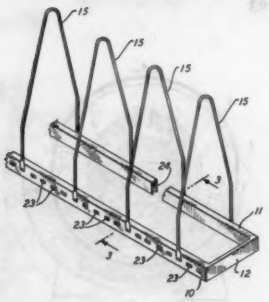
DISPLAY APPLIANCE FOR FABRIC BOLTS

Rayfield B. Kurland, 7 Buckingham Road, and Leonard J. Kurland, 43 Buckingham Road, both of West Orange, N.J.

Filed June 1, 1970, Ser. No. 42,079

Int. Cl. A47f *7/18*

U.S. Cl. 211—44 **4 Claims**



A display appliance for fabric bolt holders comprising rails disposed in spaced relation to each other, each rail having an outer wall with elongated slots therethrough communicating with hollow interiors of the rail for complementary engagement by the lower ends of bracket arms, thus removably secured to the rails in predetermined spaced relation, pairs of adjacent so spaced bracket arms being adapted to receive and display fabric bolts therebetween.

3,627,142

CLOTHES HANGING DEVICE

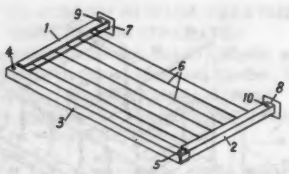
Walter Steiner, Oberseenerstrasse 14, Winterthur, Switzerland

Filed July 10, 1970, Ser. No. 53,959

Claims priority, application Spain, July 17, 1969, 150,528

Int. Cl. A47f *5/08*; D06f *53/00*

U.S. Cl. 211—119.1 **3 Claims**



A clothes-hanging device of the type incorporating two lateral support rods and a connecting rod for operatively interconnecting both lateral support rods. The clothes-hanging device can be selectively either folded together into a position of nonuse or opened to assume a position of use. A locking mechanism is provided for retaining the clothes-hanging device both in its folded or collapsed position as well as in its open position.

3,627,143

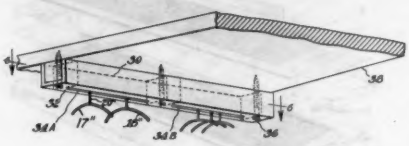
APPARATUS FOR HANGING CLOTHING

Una Pauline Hatton Alexander, 1311 East Second St., Pass Christian, Miss.

Filed Apr. 2, 1969, Ser. No. 812,806

Int. Cl. A47f *7/19*; A47h *1/04*

U.S. Cl. 211—123 **4 Claims**



The apparatus of the invention for hanging clothing includes a hollow, a horizontally extending elongated member having at least one longitudinal slot in its bottom surface. A plurality of hangers are supported by the elongated member, and each of the hangers is provided with clothing support means with a vertical shaft extending upward therefrom and having a horizontally extending bar at the top end. Each shaft extends upwardly through the longitudinal slot with the bars disposed inside the elongated member and extending in a direction transverse to the direction of elongation of the slot.

3,627,144

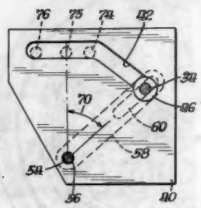
COUPLER-POSITIONING DEVICE

Howard I. Dwyer, Jr., Glen Ellyn, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed June 8, 1970, Ser. No. 44,289

Int. Cl. B61g *7/12*

U.S. Cl. 213—16 **7 Claims**



A device for easily positioning a long shank railroad coupler by means of a worm gear and gear segment. The gear segment is rigidly attached to the bottom of the coupler shank in engagement with the worm gear which may be rotated from either side or both sides of the railroad car. Means are provided for automatically disengaging the worm gear from the gear segment after the coupler is positioned thereby allowing the coupler to operate freely during service conditions without damage to the worm gear or gear segment.

3,627,145

COUPLER WITH MEANS TO SUPPORT A MATING PULLED-OUT COUPLER

Russell G. Altherr, Munster, Ind., assignor to Amsted Industries, Incorporated, Chicago, Ill.

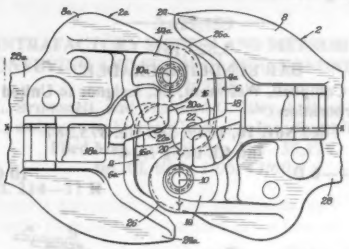
Filed Jan. 12, 1970, Ser. No. 2,140

Int. Cl. B61g *3/04*, *7/14*

U.S. Cl. 213—153 **6 Claims**

A railway coupler having a coupler head with a knuckle pivoted thereto for interlocking engagement with a similarly pivoted knuckle of a mating coupler is provided with a downwardly and outwardly flaring skirt preferably in the form of a flange depending from the bottom ear of the cou-

pler head through which ear extends a pivot pin which pivotally connects the knuckle to the head. The skirt is engageable with a guard arm of the mating coupler when it has been pulled out of engagement with its supporting vehicle



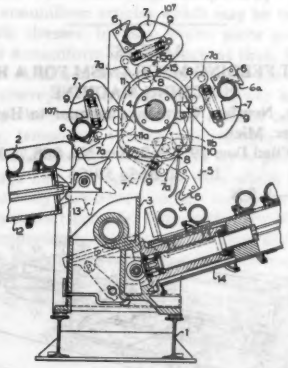
and thus is supported solely by a shelf extending from the bottom ear to a coupler head throat beneath the knuckle of the mating coupler. The skirt is effective as a wedge to hold the knuckle of the mating coupler on said shelf.

3,627,146

APPARATUS FOR SIDEWISE TRANSPORT OF TUBES OR THE LIKE

Siegfried Berndt, Solingen, Germany, assignor to Th. Kieserling & Albrecht, Solingen, Germany

Filed Aug. 25, 1970, Ser. No. 66,740
Claims priority, application Germany, Sept. 9, 1969, P 19 45 524.4
Int. Cl. B65g *29/02*
U.S. Cl. 214—1 P **10 Claims**



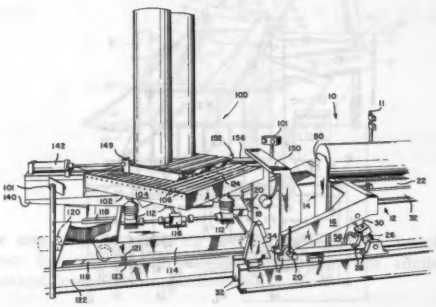
Apparatus for sidewise transport of tubes wherein a disk rotating with a horizontal shaft supports several transfer units each having a claw fixed to the disk and a second claw a portion of which is movable toward and away from the fixed claw in response to rotation of the carrier. The second claw is biased against the tube between the two claws by a spring which is stressed in response to engagement of the second claw with a tube and is permitted to dissipate energy when the second claw moves away from the first claw. In this way, the spring is not under substantial stress when the respective transfer unit does not transport a tube.

3,627,147

SYSTEM FOR UPENDING AND PALLETIZING OBJECTS

James M. Yowell, and Thomas C. Soran, both of Hoquiam, Wash., assignors to Lamb-Grays Harbor Co., Inc., Hoquiam, Grays Harbor County, Wash.

Continuation of application Ser. No. 633,884, Apr. 26, 1967, now abandoned. This application July 10, 1969, Ser. No. 870,236
Int. Cl. B65g *7/00*
U.S. Cl. 214—1 Q **9 Claims**



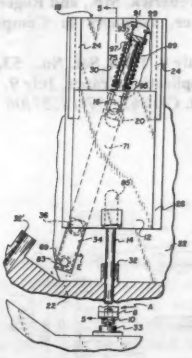
An upender section receives an object, upends the object and displaces the upended object onto a pallet. The pallet is adjustably supported by a rotatable and axially movable turntable mounted on an undercarriage for movement toward and away from the upender frame. Forward and rearward pallet positioning assemblies are disposed on opposite sides of the turntable to position a pallet thereon.

3,627,148

ASSEMBLY DEVICE

Edwin A. Hediger, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 5, 1969, Ser. No. 882,515
Int. Cl. B66c *1/10*
U.S. Cl. 214—1 BD **5 Claims**

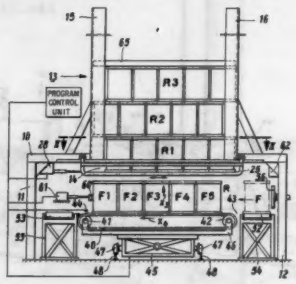


An assembly device having a reciprocally and pivotally movable workpiece holding mechanism for transferring a component or workpiece from a supply station to a work station where it is subjected to an assembly operation. The supply station is located in a plane transverse to the plane in which the work station is located, and when the workpiece holding mechanism of the assembly device is moved between the supply and work stations, it traces a path having an initial linear portion, an arcuate portion and a terminal linear portion.

3,627,149
APPARATUS FOR STACKING AND DESTACKING BARRELS

Gerhard Arnemann, Pinneberg, Germany, assignor to Fordertechnik Hamburg Harry Lassig, Muhlerdamm, Germany

Filed Jan. 21, 1970, Ser. No. 4,549
Claims priority, application Germany, Dec. 20, 1969, P 19 63 968.0
Int. Cl. B65g 57/30
U.S. Cl. 214—6 BA 24 Claims

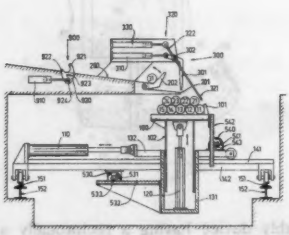


A method and an apparatus for stacking and destacking cylindrical as well as bulgy barrels which allow barrels to be stacked in several rows one on top of the other and to remove the rows of barrels one row after the other again. The apparatus includes a support frame with a storage bay for receiving the barrels. The storage bay includes a bottom feed and discharge opening through which several barrels which have been aligned in a row on a conveyor may be introduced into the bay. Means are provided for feeding the barrels to the feed and discharge opening, for aligning the barrels in a predetermined position, for lifting the barrels into the storage bay and for retaining the barrels within the bay.

3,627,150
METHOD FOR THE STACKING OF BILLETS AND STACKER

Michel G. Kazeef, Frederick, Md., and Roger Soulier, Oloron, Ste. Marie, France, assignors to Compagnie Pechinery, Paris, France

Filed July 8, 1970, Ser. No. 53,262
Claims priority, application France, July 9, 1969, 6923375
Int. Cl. B65g 57/18, 57/06
U.S. Cl. 214—6 H 15 Claims

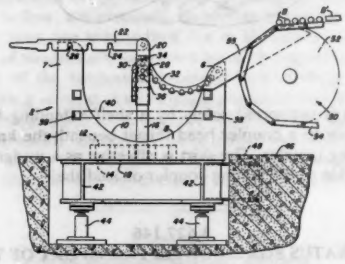


A stacker for cylindrical billets which permits stacking of billets of any length and diameter D formed of a mobile platform mounted for movement in the vertical and in the horizontal directions and having an inclined plane provided at its lower end with a feed nozzle and a billet-holding means cooperating with the feed nozzle for movement between blocking and unblocking position, and power-actuating means for movement of the platform vertically and in the horizontal directions to permit the platform to be placed in positions below the feed nozzle so that the billets released one by one by the feed and holding means drop onto the platform in an assigned position to form the package, and means for controlling the movement of the platform as well as the holding means.

3,627,151
BAR BUNDLING CRADLE

Donald M. Campbell, Westmont, Ill., assignor to United States Steel Corporation

Filed Nov. 10, 1969, Ser. No. 875,387
Int. Cl. B65g 1/14
U.S. Cl. 214—6 D 10 Claims

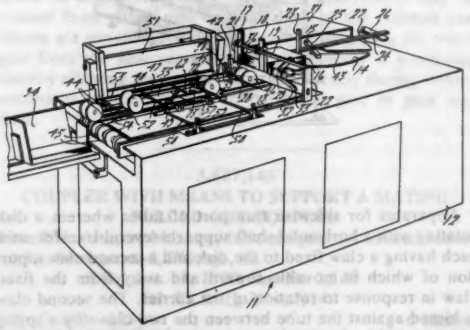


A bundling cradle for bars includes a plurality of longitudinally spaced-apart assemblies. Each assembly has two spaced-apart upwardly extending arms with a vertical post between the arms. A chain extends between one arm and the post with a chain-supporting sprocket attached to either the arm or post. The position of the post with respect to the arms is adjustable so that the catenary of the chain may be varied to vary the size of the bundle. After the desired number of bars are accumulated they are banded in position and then removed.

3,627,152
SHEET FEEDING MECHANISM FOR A HOLE-PUNCHING MACHINE

Ernst Pfaffle, Neuffen, Germany, assignor to Hans Sickinger Co., Pontiac, Mich.

Filed Dec. 29, 1969, Ser. No. 888,760
Int. Cl. B65g 59/06
U.S. Cl. 214—8.5 K 5 Claims



A machine for simultaneously punching a row of holes along one side of a group of sheets. A stack of sheets is supported by a slotted rotating disc and a finger enters one corner of the stack to separate a group of sheets at the bot-

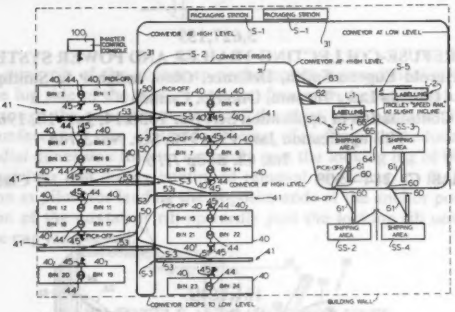
tom. A rotating depressor shaft lowers the group along its forward edge to permit it to pass into a slot in the disc, thus permitting the group of sheets to drop onto conveyors which carry it toward the punches. A longitudinally adjustable locating stop and a similarly adjustable jogger align the sheet edges at the punching station.

3,627,153

INTRAFACTORY SYSTEM AND METHOD FOR CONVEYING AND SEGREGATING NONUNIFORM ARTICLES

Paul L. Brummett, and Sigmund G. Isley, both of Smithfield, N.C., assignors to Amerel Company, Inc., Smithfield, N.C.

Filed May 6, 1970, Ser. No. 35,179
Int. Cl. B65g *1/06, 43/00*
U.S. Cl. 214—11 R **16 Claims**



An intrafactory system and method provides a semiautomated means for conveying, temporarily storing and segregating nonuniform articles which may be textile articles such as coats, dresses, blouses, shirts, piece goods and the like or other nonuniform articles such as tires, filled cartons and the like. A closed loop, continuously moving, coding-type, chain conveyor which operates at lower loading levels and higher pickoff levels codes the articles and circulates past loading, temporary vertical bin storage, labelling and shipping stations. Storage is provided by a plural group of vertical storage bins having storage rods which for each bin can be selectively positioned either locally at the bin or remotely at a master console. The articles are picked off the conveyor automatically and by gravity slide are directed to selected bins where they are temporarily stored and from which they are returned and recoded on the same conveyor for transfer to and pickoff at selected labelling or shipping stations.

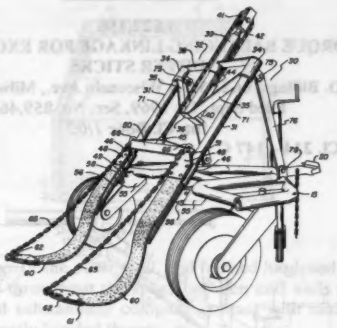
3,627,154

TRAILERABLE TOWING DEVICE AND JACK FOR VEHICLES

Ralph E. Troup, 4240 N.E. 24th Ave., Lighthouse Point, Fla.

Filed June 3, 1970, Ser. No. 42,991
Int. Cl. B60p *3/12*
U.S. Cl. 214—86 A **6 Claims**

A trailerable towing device and jack for vehicles having a single source of lifting effort applied to an equalizer bar which is guided along parallel guide rails inclined upwardly and forwardly. The equalizer bar terminates in two flexible belts having chains at the end portion thereof for engaging the undercarriage of a vehicle, usually an automobile which has been disabled and is to be towed. A lower frame rides atop a pair of castered rear wheels with a retractable wheel at the front portion and a draw bar with a standard trailer hitch attachment. The guide rails are demountably secured to the lower frame by means of a demountable brace. The entire assembly, by removing several bolts may be knocked down for shipment in a flat configuration or similarly knocked down for storage.

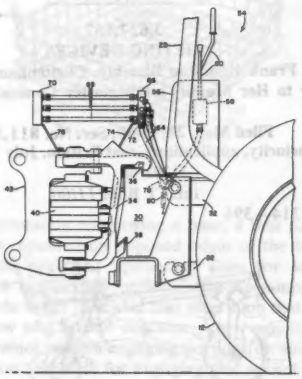


3,627,155

HYDRAULIC FLUID HOSE HANDLING MEANS FOR A SIDE SHIFTABLE BACKHOE

Roger Dale Van Der Zyl, Durango, Iowa, assignor to Deere & Company, Moline, Ill.

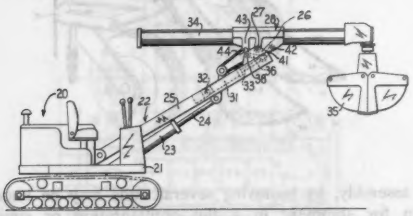
Filed Apr. 9, 1970, Ser. No. 26,974
Int. Cl. B66f *9/00;* **E02f** *3/00*
U.S. Cl. 214—138 **6 Claims**



A side shiftable backhoe has an operator's station fixed centrally to a main transverse frame at a location under the protective canopy of the backhoe carrying tractor. A backhoe boom support is pivotally connected by means of a vertical pivot structure to a shift block that is mounted for transverse shifting movement on the main transverse frame. A first hydraulic fluid manifold is supported on the shift block by means permitting the manifold to swivel about a generally vertical axis and a second hydraulic fluid manifold is fixed to the backhoe boom support. A first set of fluid hoses interconnects a valve block at the operator's station with the first manifold and the hoses are of sufficient length the shift block to shift to the ends of the main frame and a spring means is connected between the hoses to withdraw excess portions thereof to a cavity in the main frame. A second set of hoses is interconnected between the first and second manifolds and the hoses undergo bending when the backhoe

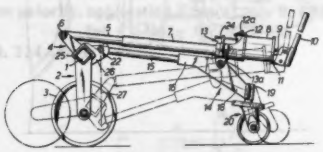
boom structure is swung from side to side about the pivot structure, the bending causing the first manifold to pivot on its mounting axis to maintain the bend in the hoses at a minimum.

3,627,156
TORQUE BALANCING LINKAGE FOR EXCAVATOR DIPPER STICKS
Roy O. Billings, 6621 West Wisconsin Ave., Milwaukee, Wis.
Filed Sept. 19, 1969, Ser. No. 859,461
Int. Cl. B66c *1/00*
U.S. Cl. 214—147 G **1 Claim**



A dipper stick is adjustably mounted in a saddle which is pivoted to upstanding brackets at the outer end of the boom of an excavating machine, there being an hydraulic cylinder pivoted at one end to the boom and having a piston rod projecting from its other end and connected to the lower converging ends of two sets of links. One set of links acts as a radius rod and has its upper ends pivotally connected to upper portions of the boom brackets inwardly of the pivotal connection for the saddle, and the other set of links has its upper ends pivotally connected to the saddle outwardly of the pivotal connection for the saddle.

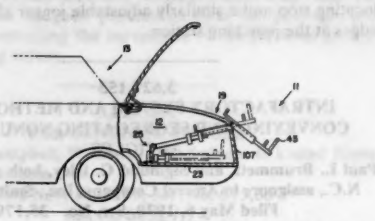
3,627,157
LIFTING DEVICES
Herbert Frank Hamilton Blatchly, Cheltenham, England, assignor to Her Majesty's Postmaster General, London, England
Filed Mar. 28, 1969, Ser. No. 811,329
Claims priority, application Great Britain, July 1, 1968, 31281/68
Int. Cl. B66f *11/00*
U.S. Cl. 214—394 **8 Claims**



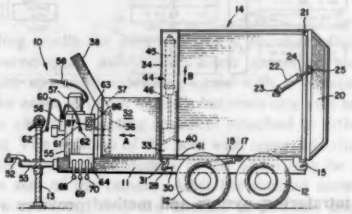
A device for lifting manhole covers in which hooks for attachment to the cover are mounted upon and are rotatable with a lifting beam to produce vertical lifting movement of the hooks. The beam can be rotated by an hydraulically operated jack. The beam is mounted upon arms having wheels at their ends.

3,627,158
LOADER FOR VEHICLE TRUNK COMPARTMENT
Frank Kobasic, 427 Harwicke Road, Springfield, Pa.
Filed June 9, 1969, Ser. No. 831,369
Int. Cl. B60r *9/00*
U.S. Cl. 214—450 **7 Claims**

A collapsible loader for the trunk compartment of an automotive vehicle comprising a carriage adapted to support a load, a slide member slidingly attached to the carriage, a track member slidingly attached to the slide member, a base member adapted for attachment to a floor of a trunk compartment of an automotive vehicle, and a link pivotally connected at one end to the base member and at its other end to the track member.



3,627,159
REFUSE-COLLECTING TRAILER AND POWER SYSTEM
Harold Eugene Smith, Defiance, Ohio, assignor to Smithpac Canada Ltd., Toronto, Ontario, Canada
Continuation of application Ser. No. 703,214, Jan. 18, 1968. This application Jan. 19, 1970, Ser. No. 3,744
Int. Cl. B60p *1/16*
U.S. Cl. 214—508 **7 Claims**

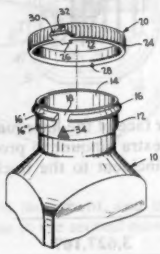


A refuse-collecting trailer includes a movable unit comprising a wheeled trailer chassis with a refuse-receiving receptacle pivotally mounted thereon for movement between a generally horizontal position and a tilted dumping position. A loading aperture extends through a wall of the refuse-receiving receptacle for alignment with a loading chamber. A loading plunger pushes refuse from within the loading chamber through the loading aperture for compaction by a vertically reciprocable compacting plunger provided in the refuse-receiving receptacle. A hydraulic pressure system mounted on the chassis for operating the loading plunger and the refuse-compacting plunger includes flexible hydraulic hoses with quick-disconnect couplings to permit operation of the plungers and of a hydraulically operated dumping cylinder and hydraulically operated tailgate cylinders by a hydraulic pump provided on a towing vehicle used for moving the trailer from its loading location to a refuse dump.

3,627,160
SAFETY CAP
William Horvath, Chatham, N.J., assignor to Diamond International Corporation, New York, N.Y.
Filed Oct. 8, 1970, Ser. No. 79,172
Int. Cl. A61j *1/00;* **B65d** *55/02*
U.S. Cl. 215—9 **10 Claims**

A safety cap of resilient plastic material having a depending skirt within which is formed an annular rib having an anchor portion and a radially inwardly projecting locking lug diametrically opposed to such anchor portion, the rib and the locking portion being of substantial radial extent for positive engagement beneath the locking rib around the container

neck to strongly resist removal of the cap. The remainder of the annular rib within the cap skirt is of reduced radial width to function in the manner of a snap rib on the lug side of the skirt. The skirt rib has a continuous annular upwardly presented cam surface for cooperation with the locking rib of the container neck to maintain the end wall of the cap in sealing engagement with the end of the neck. Rotation of the cap to bring the lug into registry with the cap through the



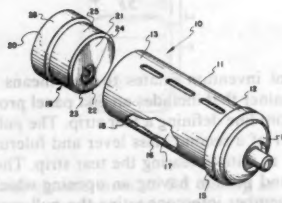
locking rib of the container neck permits upward flexing of the lug side of the closure cap and free movement of the lug through the gap, the portions of the skirt rib on either circumferential side of the lug being of sufficiently reduced radial dimension to snap upwardly past the locking lug of the container and during continued removal of the cap to function as pilots for leading the opposite ends of the anchor portion of the container rib upwardly past the locking rib until the cap is removed.

3,627,161

BABY BOTTLE AND MUSIC BOX UNIT

Marvin L. Wergeland, 37 Saviers Road, Oxnard, Calif.

Filed Nov. 26, 1969, Ser. No. 880,010
Int. Cl. A61j *9/00*
U.S. Cl. 215—11 C **5 Claims**



In order to soothe and calm a baby and encourage him to eagerly drink from a baby bottle, a cap retaining a music box is shaped to be detachably coupled to the bottom of the baby bottle. A closed end of the cap has a positioning hole through which a windup stem of the music box extends so a person can easily crank or wind up the music box at a desired time.

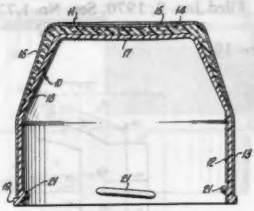
3,627,162

INSULATED CUP

Fred P. Dossin, Meriden, and Fred L. Nestrock, Avon, both of Conn., assignors to Union Manufacturing Company

Filed Jan. 28, 1966, Ser. No. 523,637
Int. Cl. A47j *41/00*
U.S. Cl. 215—13 **6 Claims**

1. An insulated cup, comprising a hard outer cup shell, a hard inner cup shell received within the outer shell, both cup shells having peripherally contacting concentric cylindrical walls near the open end of the cup, the inner shell including a radially outward flange near the open end and the periphery of the open end of the outer shell being seated at said flange, the walls of said shells being otherwise of differing convergent tapers and spaced axially and radially, the convergent taper of the inner shell being greater than that of the outer shell and having a closed bottom axially spaced from the



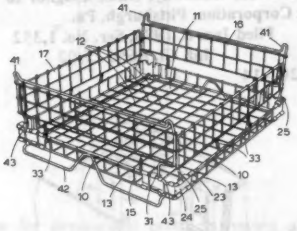
closed bottom of the outer shell, and foamed hardened bonding material throughout the space between said walls and in intimate and substantially complete contact with said walls and permanently bonded thereto.

3,627,163

STORAGE CONTAINERS

Cyril Taylor, 67 Bittell Road, Barnt Green, and Ernest Edwin Baggot, 26 Canterbury Road, West Bromwich, both of England

Filed Feb. 10, 1970, Ser. No. 10,248
Int. Cl. B65d *7/26, 7/20, 21/02*
U.S. Cl. 220—6 **4 Claims**



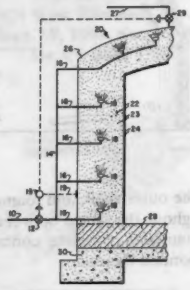
A storage container comprising a base, a first pair of upstanding sides mounted on opposed edges of the base, support means on said first upstanding sides for supporting above said one container a further similar container, at least one further side lower than said first sides such that its lower edge lies below said further container when mounted above said one container, socket-engaging portions on said further side, sockets on said base for engaging said socket-engaging portions in such a manner that when said portions are lowered in said sockets the further side is supported in an upright position by the socket-engaging portions in the sockets, but when said further side and socket-engaging portions are raised up, said socket-engaging portions are constrained at the top of the sockets and allow pivotal movement of said further side in an outward direction to provide access to the interior of the container even when a further container is stacked above said one container, further socket-engaging portions on said first sides, further sockets on said base for engaging said further socket-engaging portions in such a manner that when said portions are lowered into said further sockets the first sides are supported in an upright position by the socket-engaging portions in the sockets, but when said first sides and further socket-engaging portions are raised up, said further socket-engaging portions are constrained at the top of the further sockets and allow pivotal movement of said first sides in an inward direction to enable the container to be collapsed when empty.

3,627,164

METHOD AND APPARATUS FOR MAINTAINING UNIFORM INSULATION DENSITY

Robert A. Wilson, Cranford, N.J., assignor to Esso Research and Engineering Company

Filed Jan. 9, 1970, Ser. No. 1,726
Int. Cl. B65d *7/22*
U.S. Cl. 220—10 **16 Claims**



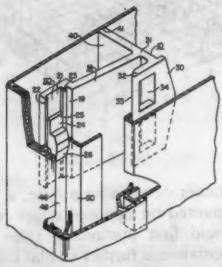
A process and apparatus for maintaining uniform density of granular-type insulation which is subject to packing. Short gas blasts, from strategically disposed jets fluff the insulation when packing occurs to restore original density. The gas blasts can be triggered by automatic-type control devices which indicate a packed condition.

3,627,165

REFRIGERATOR INNER LINER SUPPORT

William R. Cobb, Galloway, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 8, 1970, Ser. No. 1,352
Int. Cl. B65d *25/02*
U.S. Cl. 220—14 **10 Claims**



A molded plastic support for securing the inner liner of a refrigeration unit in proper disposition within the outer shell prior to being placed in a fixture for foamed-in-place insulation. The support is clipped through an aperture in the hat portion of the outer shell, and a shoulder on the support locks the clip in position. The support also has an upstanding leg portion for receiving a J-flange on the inner liner. The J-flange is crimped by a special tool into an aperture in the leg of the support so that the inner liner is securely supported in the outer shell prior to foaming.

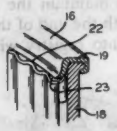
3,627,166

SAFETY CAN

Richard T. Walter, Norristown, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Sept. 22, 1969, Ser. No. 859,796
Int. Cl. B65d *17/24, 25/14, 25/34*
U.S. Cl. 220—54 **1 Claim**

A tubular container having an end wall with a removable central portion, the latter having the exposed edge thereof guarded by a liner extending along the wall of the container after the central portion has been removed. The liner may be separable from the container body, and may be folded upon itself, so that the inner face of the liner may extend inward of the exposed edge an extra amount to provide a more effective guard than that incident to the thickness alone of the liner.

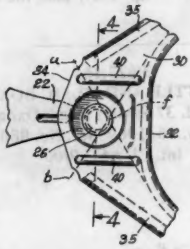


3,627,167

PULL MEANS FOR TEAR STRIP

Richard D. Zenger, Downers Grove, and Audie L. Lambert, Rosemont, both of Ill., assignors to National Can Corporation, Chicago, Ill.

Filed Sept. 16, 1969, Ser. No. 858,454
Int. Cl. B65d *17/24*
U.S. Cl. 220—54 **4 Claims**



The present invention relates to pull means for an easy opening container that includes an end panel provided with a weakened score line defining a tear strip. The pull means acts in the manner of a second class lever and fulcrum action on the tear strip to initiate tearing the tear strip. The pull means includes an end portion having an opening which receives a connecting member interconnecting the pull means with the tear strip and further includes a pair of spaced parallel ribs which are transversely spaced from a plane defined between the axis of the opening and the point at which an opening force is applied to the pull means. The spaced parallel ribs dissipate the forces from generally straight line paths from the edge of the end portion which defines the fulcrum, to a major area of the end portion so as to prevent a weakening of the end portion along the straight line paths which may cause elongation of the opening in the pull means.

3,627,168

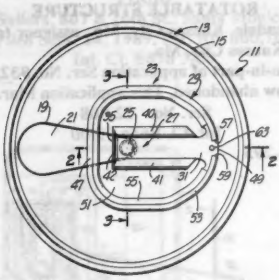
EASY OPENING CONTAINER WALL WITH VENT OPENING

Ermal C. Fraze, 355 West Stroop Road, Dayton, Ohio

Filed Nov. 13, 1969, Ser. No. 876,236
Int. Cl. B65d *17/24, 17/00*
U.S. Cl. 220—54 **8 Claims**

An easy opening container wall including a container wall having a line of weakness therein defining a tear portion. The container wall has a rupturable region other than the line of weakness. A tab is attached to the container wall and is

movable sequentially through at least first and second movements. A vent opening is formed in the container wall in



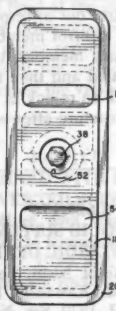
response to the first movement, and the line of weakness is ruptured in response to the second movement.

3,627,169

MEMBER AND METHOD FOR CLOSING AN OPENING IN A PRESSURE CHAMBER

Frank D. Howe, and Robert W. Decker, both of Painted Post, N.Y., assignors to Ingersoll-Rand Company, New York, N.Y.

Filed Sept. 15, 1969, Ser. No. 857,887
Int. Cl. B65d *45/00*
U.S. Cl. 220—55 R 4 Claims



An inside-out closure member for closing an access opening in a pressure chamber, and a method for practicing its use. The member is a plate of greater overall dimension than the opening and carries a jacking bolt, in penetration thereof, for bearing against an inner surface of the chamber. Chamber pressure holds the plate in closure position after, according to the method, the jacking bolt is used to first constrain the plate in alignment over the opening.

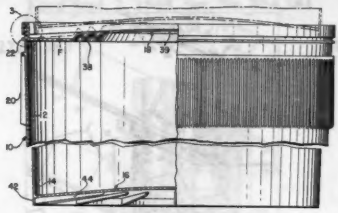
3,627,170

CONTAINER

Dudley C. Pulliam, and Dana B. Bates, both of Seattle, Wash., assignors to Simpson Timber Company, Seattle, Wash.

Filed Sept. 15, 1969, Ser. No. 857,753
Int. Cl. B65d *43/10, 21/02*
U.S. Cl. 220—60 R 2 Claims

A plastic food container is provided with a straight walled top portion and a tapered bottom portion. The bottom portion terminates in a peripheral lip surrounding a concave bottom. The container has a removable top which is provided with a peripheral locking flange having an enlarged edge which snaps over an enlarged rim on the container. The top is also provided with an accordion fold to allow upward expansion of the top. A plurality of spacers are provided on the top which interlock with the peripheral lip of the bottom portion of the next container when the containers are stacked. A



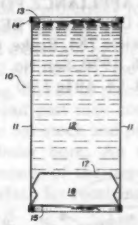
peripheral bead is provided on the top and engages a groove in the top portion of the container for providing a seal. Ribs are provided to space the containers in a stack to allow air circulation.

3,627,171

VENTING CONTAINER FOR PRESSURIZED PRODUCTS

Milton Kaplow, White Plains, N.Y., and Stephen Linn, Tenafly, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 16, 1970, Ser. No. 19,599
Int. Cl. B65d *25/00*
U.S. Cl. 220—85 B 8 Claims



A container for pressurized products having an interior flexible or displaceable membrane of product-impermeable material effectively dividing the container interior into a product-containing chamber and a pressure relief chamber. A vent device when actuated places the pressure relief chamber in communication with atmosphere which enables interior expansion of the product-containing chamber with consequent reduction of the positive interior pressure thereof.

3,627,172

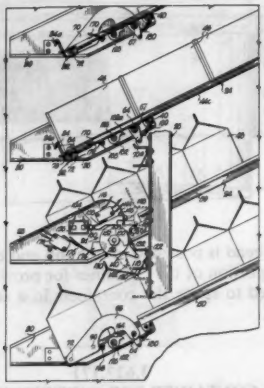
INCLINED SHELF PRODUCT VENDING MACHINE

Le Roy D. Gore, Independence, Mo.; Kermit W. Dyer, Overland Park, Kans., and Charles A. Moss, Lee 's Summit, Mo., assignors to The Vendo Company, Kansas City, Mo.

Filed Dec. 15, 1969, Ser. No. 884,811
Int. Cl. B65g *59/00*
U.S. Cl. 221—129 10 Claims

An inclined shelf article dispensing machine having a stack of vertically spaced article support structures each provided with a series of side-by-side inclined article supports adapted to receive articles in a line thereon which are restrained against gravitational discharge by a blocking wall at the lower end of the structure. Selectively operable mechanism is provided for lifting a lowermost product on a support of a selected structure through a displacement for gravitational discharge over the blocking wall engaged thereby. Clutch and cam means are provided in association with each structure for effecting discharge of articles from the supports

thereof in a repeated pattern upon successive operations of corresponding clutch means by the operating mechanism.



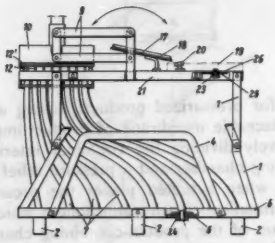
Articles of diverse sizes may be dispensed from the supports without alteration of the operating mechanism.

3,627,173

HORTICULTURAL APPLIANCE FOR DISPENSING SEEDS ONTO SEED BEDS

Reinhard Kerker, Meerwiese 784, Brake, Germany

Filed Feb. 26, 1970, Ser. No. 14,565
Int. Cl. A01c *5/00*
U.S. Cl. 221—211 **20 Claims**



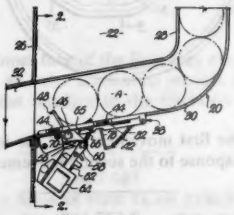
A frame is positionable over a surface area on which seeds are to be individually deposited at predetermined spacing. A plurality of elongated hoses are carried by the frame and have respective upper open ends located in a common plane and lower open ends which are also located in a common plane and which are positioned at the aforementioned predetermined spacing. A pickup element has a hollow interior and includes a plurality of nozzles communicating with the hollow interior and each dimensioned to pick up a single seed. Mounting means mounts the pickup element for movement between two positions in one of which the nozzles communicate with a supply of seeds and in the other of which each of the nozzles registers with one of the upper open ends. Actuating means is operable for applying suction to the hollow interior when the element is in its one position, and for applying pressure to the hollow interior when the element is in its other position, to thereby respectively engage individual seeds with and discharge them into the upper open ends from the nozzles.

3,627,174

LOCK AND INDEXING MECHANISM FOR CONTROLLING INCREMENTAL ROTATION OF ROTATABLE STRUCTURE

John W. Baxendale, Kansas City, Mo., assignor to The Vendo Company, Kansas City, Mo.

Continuation-in-part of application Ser. No. 832,093, June 11, 1969, now abandoned. This application Mar. 26, 1970, Ser. No. 22,868
Int. Cl. B65g *59/00*
U.S. Cl. 221—295 **21 Claims**



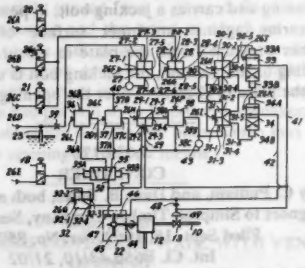
A lock and indexing mechanism for controlling successive equal increments of rotational motion of rotatable structure, such as a paddle wheel type article release structure in a vending or dispensing machine. The shaft of the structure extends into the mechanism and is provided with a rotor section that carries a number of balls or rollers which are radially shiftable toward and away from locking positions received within angularly spaced recesses in a stationary control member of the mechanism. To index the structure, the balls are permitted to move out of respective recesses by the operation of a rotatable control member of the mechanism coaxial with the stationary member, the rotatable member being momentarily actuated and then returned to a standby position causing each ball to relock in the next recess to interrupt rotation of the structure after one increment of rotation.

3,627,175

FIXED QUANTITY LIQUID SUPPLYING APPARATUS USING FLUIDIC DEVICES

Takeo Hisada, and Takeshi Nishi, both of Tokyo, Japan, assignors to Tokico Ltd., Kawasaki, Kanagawa-ken, Japan

Filed July 31, 1970, Ser. No. 60,046
Claims priority, application Japan, July 31, 1969, 44/60565, Sept. 16, 1969, 44/73343
Int. Cl. B67d *5/30*
U.S. Cl. 222—14 **9 Claims**



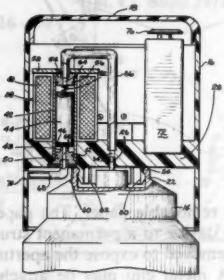
A fixed quantity liquid supplying apparatus performs a liquid supplying operation of fixed quantity through multiple stage valve closing. The liquid supply is controlled by a control circuit comprising fluidic devices or amplifiers which closes the valve in a fuel supplying pipe in multiple stages. The fluidic devices are operated by fluid such as air.

3,627,176

AUTOMATIC SPRAY DISPENSER FOR PRESSURIZED FLUID

William M. Sailors, 807 B 26th St., Santa Monica, Calif.

Filed Sept. 24, 1969, Ser. No. 860,702
Int. Cl. B67d 5/08
U.S. Cl. 222—70 10 Claims



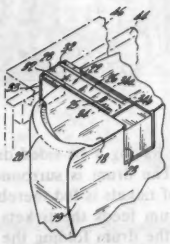
A solenoid operated valve has a moveable armature piston restricting the flow of pressurized fluid introduced at the inlet end of a cylinder towards an outlet at its opposite end. A resilient closure member on the outlet end of the piston contacts a protruding outlet valve seat to maintain the valve closed until the solenoid coil is energized, at which time the outlet is opened momentarily to release a predetermined amount of pressurized fluid at the outlet end of the cylinder to a spray nozzle. The substantial flow impedance between the cylinder inlet and outlet results in a pressure differential between opposite ends of the piston that reseats and holds the closure member against the valve seat to prevent leakage.

3,627,177

DISPENSER COMBINED WITH HANGING CLIP FOR INVERTED SUPPORT

Paul Marcus, Pearl River, and James R. King, Northport, both of N.Y., assignors to Knomark, Inc., Jamaica, N.Y.

Filed Apr. 22, 1970, Ser. No. 30,742
Int. Cl. B67d 1/00
U.S. Cl. 222—181 3 Claims



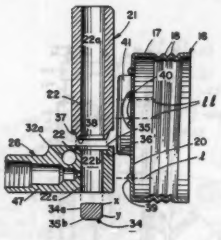
The combination of a liquid dispensing container and a hanging device for suspending the container in an inverted position from the upper interior of a conventional flush tank. The hanging device is adjustable from a storage position to a hanging position and includes means cooperating with a guide groove in the container for facilitating motion of the device between the storage position and the hanging position. The hanging device further includes a ribbed construction for increasing the strength thereof.

3,627,178

DISPENSING HEAD FOR LEVER-OPERATED HAND GREASE GUN

Edwin P. Sundholm, R.R. 1, Albert City, Iowa

Filed Sept. 2, 1969, Ser. No. 854,581
Int. Cl. B67d 3/00
U.S. Cl. 222—383 14 Claims



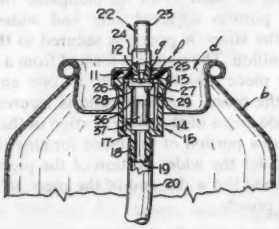
A built-up, fused head assembly for a lever-operated hand grease gun and adapted for use with a thin walled grease container provides a high-pressure cylinder, formed from at least two parts, one of which is preferably made from round metal stock and the other from rectilinear metal stock. The cap is formed from relatively thin sheet metal stock and includes a channel-shaped wall area for receiving and supporting the high-pressure cylinder part formed from the round metal stock. The cap sidewalls have corrugated, roll-type threads for mating corresponding threads on the grease container. The head part, which is preferably formed of the rectilinear metal stock, can also provide the housing for the outlet check valve, and an extension of the cylinder bore can pass through the sidewall of the part, the extension being closed by a press-fitted plug, locked in place by metal deformation. Alternatively, the head part may comprise an integral part formed of rectilinear bar stock and providing an oversize extension of the cylinder bore. An enlarged depression is formed about the mouth of the oversize bore extension to provide a seating surface for receiving the round metal stock and being welded to it.

3,627,179

DISPENSING VALVE ASSEMBLY INCLUDING INTEGRALLY MOLDED SPRING

Christian T. Scheindel, Glen Gardner, N.J., assignor to Clayton Corporation, St. Louis, Mo.

Filed Oct. 17, 1969, Ser. No. 867,168
Int. Cl. B65d 83/14; F16k 31/58
U.S. Cl. 222—402.1 8 Claims

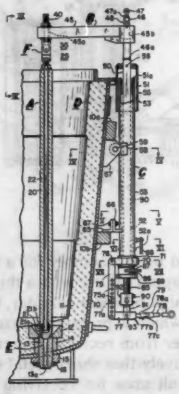


A dispensing valve for pressure packaging has a flow adapter cup with integral spring portions molded to extend upward in a circle around the bottom flow inlet. Tips of the spring portions abut against a face on the lower part of the rigid valve stem. On displacing the valve stem downward or by tilting, the spring portions bias it to closed position.

3,627,180
STOPPER ROD WITH ASSEMBLY FOR ALIGNMENT WITH NOZZLE

Harry T. Montgomery, New Castle, Pa., assignor to Pennsylvania Engineering Corporation, New Castle, Pa.

Filed Feb. 12, 1970, Ser. No. 10,805
Int. Cl. B22d *37/00*
U.S. Cl. 222—505 5 Claims

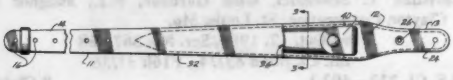


A stopper rod assembly for a molten-metal-dispensing ladle is provided with a double clevis connection between its vertical stopper and its support arm such that the stopper rod can and will align its flow controlling lower end or head portion with the tap hole in the ladle, irrespective of misalignment that may have occurred with reference to its supporting arm, associated slide rod, etc.

3,627,181
RIFLE SLING

John E. Bianchi, Bradbury Estates, Calif., assignor to Bianchi Leather Products, Inc., Monrovia, Calif.

Filed Jan. 7, 1970, Ser. No. 1,185
Int. Cl. A41c *33/00*
U.S. Cl. 224—1 A 7 Claims



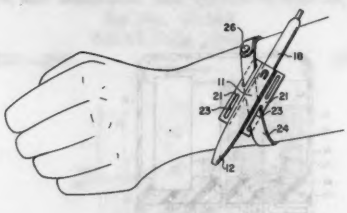
A rifle sling is made from an elongated flexible strap which has a portion adjacent one end wider than the remainder of the strap. A pouch is secured to the strap for holding ammunition. The pouch is formed from a single elongated flexible piece which is wider at one end than the remainder of the piece. The wider end is secured at its side edges to the side edges of the wider portion of the sling strap. The more narrow portion of the piece forming the pouch is folded back under the wider portion of the piece to extend under and beyond the wider end of the piece to form a flap for closing the pouch.

3,627,182
PEN HOLDER ATTACHMENT DEVICE

Forrest I. Calkins, 336 Malcolm Ave., Belmont, Calif.

Filed Dec. 5, 1969, Ser. No. 882,475
Int. Cl. A45c *11/34*
U.S. Cl. 224—28 D 5 Claims

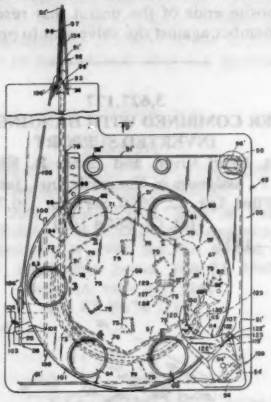
A tapered, tubular sheath is shaped to receive, and retain against unintentional dislodgment, the end of a conventional ballpoint pen. Ears project from opposite sides of the sheath providing a flat attachment surface. Apertures are formed in the ears to receive a wrist-encircling strap. As an alternate means of attachment to a telephone base or other structure, a fiber backing carrying pressure sensitive adhesive on top and bottom surfaces may be applied to the attachment surface and protected by removable paper. The paper may be removed to attach the device to a permanent structure; the backing itself may be removed to expose the apertures for insertion of the strap. A metal clip may be attached to the backing to attach to a pocket; if the clip is magnetized, it may cling to a steel surface.



3,627,183
TICKET DISPENSER DEVICE

Vern K. Mason, 2542 Clover Drive, Grand Forks, N. Dak.

Filed Feb. 6, 1970, Ser. No. 9,202
Int. Cl. B26f *3/02*; B65h *17/04*
U.S. Cl. 225—96.5 3 Claims



A ticket dispenser having a six-sided drum with a dial for rotating the drum. The drum is surrounded by an arcuate guide and a length of tickets is fed therebetween. The rotating action of the drum feeds the tickets around the drum, with the corners of the drum folding the tickets at the perforation lines for easier separation. A channel receives the tickets after passing about the drum and the dial has a spring return so that after dialing the return action of the dial actuates a movable channel portion for partially severing the tickets. The dispenser also has a mechanism to prevent the drum from overtraveling while feeding the tickets.

ERRATUM

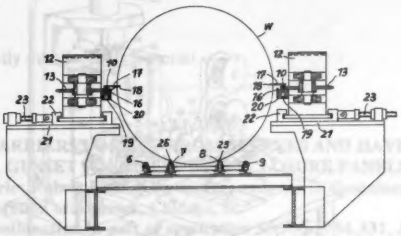
For Class 226—90 see:
Patent No. 3,627,125

3,627,184

APPARATUS FOR TRANSPORTING LOOPED ROD THROUGH A COOLING STAGE

Gerhard Berz, Dusseldorf, and Klaus Vortkamp, Neuss, both of Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed June 3, 1969, Ser. No. 829,983
Claims priority, application Germany, June 8, 1968, P 17 52 519.8
Int. Cl. B65h *29/16*
U.S. Cl. 226—74 3 Claims



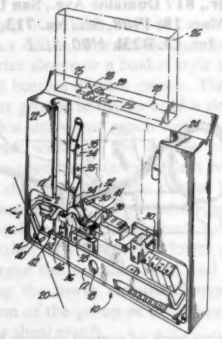
This invention relates to an apparatus for transporting looped wire from a loop former through a cooling stage to a collector, the apparatus comprising three conveyor chains each having teeth for engaging loops of the looped wire, a first conveyor chain arranged to engage the wire from beneath, and second and third conveyor chains arranged to engage the wire from opposite sides.

3,627,185

TAPE RECORDING SYSTEM MECHANISM

James R. Trammell, Parma Heights, Ohio, assignor to Scanfax Systems Corporation, New York, N.Y.

Filed Jan. 5, 1970, Ser. No. 585
Int. Cl. G11b *15/66*
U.S. Cl. 226—90 4 Claims



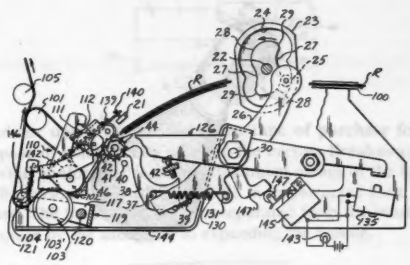
A pinch roller positioning mechanism for use in a tape recording system is described as including a linear cam having a cam extension, a spring detent and a latch, all affixed to a cassette-receiving module for controlling the motion of a pinch roller with respect to a capstan shaft and a recording tape in a desired loading sequence. The control is in response to the loaded and unloaded condition of the cassette-receiving module and the position of the cassette-receiving module with respect to the system operational panel, so that the pinch roller is in contact with the tape and capstan shaft only when the cassette-receiving module is loaded and the cassette-receiving module is in a position within a few degrees of being parallel to the panel.

3,627,186

RECORD HANDLING AND RECORDING APPARATUS

Ralph L. Berke, Park Ridge, and Clayton H. Clark, Mundelein, both of Ill., assignors to SCM Corporation, New York, N.Y.

Filed Sept. 15, 1969, Ser. No. 857,977
Int. Cl. B65h *25/30*
U.S. Cl. 226—100 7 Claims



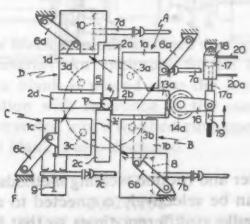
There is disclosed a recorder together with verification, tape-motion, slack-tape, and out-of-tape alarms. In particular, the incoming signal is temporarily mechanically stored in the recorder by selectively positioning mechanical elements in either one of two positions. A signal is generated in response to the position of these elements and is verified by comparing the generated signal with the incoming signal. A lack of comparison results in an alarm condition. An alarm condition also exists when the tape-feeding mechanism operates without feeding the record medium, when the tape becomes too slack indicating either that the tape is not being taken up or that the tape has left its predetermined path of movement, or when the tape supply is exhausted.

3,627,187

TRANSPORTING APPARATUS FOR PIPES OR THE LIKE

Heinz Hartkopf, Solingen, Germany, assignor to Th. Kieserling &Albrecht, Solingen, Germany

Filed Jan. 28, 1970, Ser. No. 6,345
Claims priority, application Germany, Feb. 1, 1969, P 19 05 066.9
Int. Cl. B65h *17/20*
U.S. Cl. 226—108 10 Claims

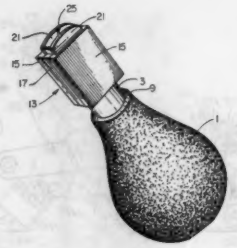


Transporting apparatus for tubes, bars or like workpieces wherein the housings for driven work-engaging rolls are pivotally mounted on a support which is turnable about the axis of a conveyed workpiece to thereby move the rolls radially and sideways and to enlarge or reduce the area of the passage for workpieces. The housings are coupled to links which hold them against changes in angular position during rotation of the support. The latter is rotatable by a double-acting cylinder and respectively reduces or increases the area of the passage between the peripheral surfaces of the rolls when it is caused to rotate in a clockwise or in a counter-clockwise direction.

3,627,188
DEVICE FOR EXTRACTING MAGNETIC TAPE FROM A CASSETTE

John E. Horne, Hyattsville, Md., assignor to Rawdon Smith Associates, Inc., Washington, D.C.

Filed July 16, 1970, Ser. No. 55,420
Int. Cl. B66c 1/02
U.S. Cl. 226—200 9 Claims

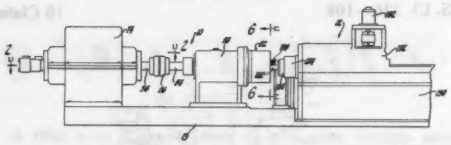


A device for extracting tape from a cassette without disengagement from the spindles in the cassette, having suction means communicating with a relatively deep, elongated chamber which communicates with an open mouth of internal width closely approximating that of the tape to be extracted. The mouth of the device has front and sidewall parts extending from the chamber of outer dimensions which fit into the well of a magnetic tape cassette so that the tape to be extracted may be speedily and easily sucked into the elongated chamber in a loop gently, without damage by applying a relatively instantaneous suction.

3,627,189
FRICTION WELDER

Edwin D. Ditto, Ann Arbor, and William S. Stone, Trenton, both of Mich., assignors to General Electric Corporation, Detroit, Mich.

Filed Nov. 25, 1968, Ser. No. 778,720
Int. Cl. B23k 27/00
U.S. Cl. 228—2 13 Claims

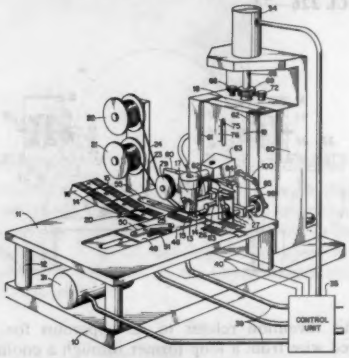


Friction welder and friction welding methods in which plural flywheels can be selectively connected to a single workpiece drive spindle at different times so that kinetic energy can be stored in one flywheel as the kinetic energy of another flywheel is being used to relatively rotate and frictionally weld two workpieces engaged under thrust load. After the workpieces are welded, new workpieces are inserted into the welder so that the energy of the second flywheel can be utilized to relatively rotate and frictionally weld the other workpieces engaged under thrust load as kinetic energy is being stored in the first flywheel for subsequent friction welding. As the workpieces are being relatively rotated, they can be slid laterally relative to each other so that all parts of the interface are cleaned and directly heated by friction. Both workpieces are rotated during welding so that a single tool can be employed to facilitate removal of hot-weld flash.

3,627,190
APPARATUS FOR BONDING SEMICONDUCTOR ELEMENTS

Hubert J. Ramsey, Burlington, Mass., assignor to GTE Laboratories Incorporated

Filed Oct. 28, 1969, Ser. No. 871,873
Int. Cl. B23k 1/00, 5/00
U.S. Cl. 228—4 9 Claims

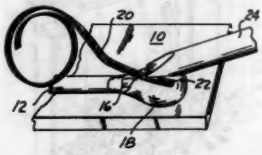


Apparatus for compliant bonding beam-leads of a semiconductor element to metallized areas of a substrate. Lengths of uniform ribbon of a deformable material are disposed between a heated bonding tool and the beam-leads. The bonding tool is pressed against the lengths of ribbon to compress the beam-leads between the ribbons and the metallized areas for bonding. After bonding, the used lengths of ribbon are replaced by new lengths from continuous supplies stored on reels.

3,627,191
SOLDER WICK

Jesse Carl Hood, Jr., 817 Dumaine Ave., San Dimas, Calif.

Filed Mar. 18, 1968, Ser. No. 713,976
Int. Cl. B23k 1/00, 5/22
U.S. Cl. 228—19 2 Claims



A solder-removing wick of copper strands having an exterior capillary surface of copper directly and substantially entirely coated with a noncorrosive flux. The wick is coated by contacting it with a flux solution that wets it sufficiently to substantially entirely coat its exterior surface while retaining the capillary properties of the surface.

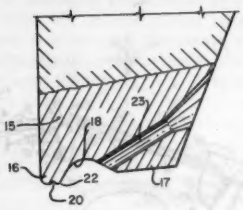
3,627,192
WIRE LEAD BONDING TOOL

William A. Killingsworth, Glendora, Calif., assignor to Bearings, Seale & Gears, Inc., Redwood City, Calif.

Filed Feb. 3, 1969, Ser. No. 795,910
Int. Cl. B23k 3/02
U.S. Cl. 228—54 7 Claims

A bonding tool for wire lead bonding including a relatively

stiff shank, a wire guide and a bonding tip of relatively hard,



slightly ductile, inert material.

3,627,193

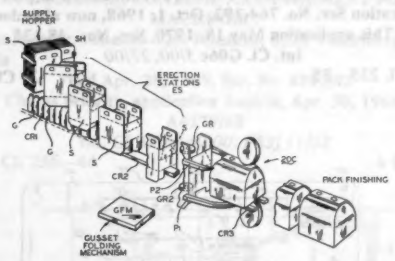
CARRIERS FORMED FROM SLEEVES AND HAVING GUSSET FOLDED BOTTOM CLOSURE PANELS

Charles Robert Helms, Barto, Pa., assignor to Container Corporation of America, Chicago, Ill.

Continuation-in-part of application Ser. No. 754,331, Aug. 21, 1968, now abandoned, Original application Oct. 2, 1969, Ser. No. 863,049, now abandoned. Divided and this application Apr. 22, 1970, Ser. No. 30,917

Int. Cl. B65d *5/02*

U.S. Cl. 229—37 R 13 Claims



A discrete group of articles, such as cans or bottles, are enclosed in a carrier sleeve. The articles are arranged in a double row in a carrier sleeve or a basket style carrier, both having gusset folded bottom closure panels. The carriers are applied to container groups in the form of a sleeve as the group moves from a first conveyor reach having a width substantially equal to the width of the double row, and on to a second conveyor reach substantially less in width than the first reach. The sleeve forming the carrier being adapted to move into position around the container group as it moves from the first reach to the second reach to hold the articles stably in the carrier. The sleeve has lower closure elements adapted to embrace the second reach, and structure is provided for moving the lower closure elements into position against the bottom of the group as the group moves from the second reach to a third reach.

3,627,194

HANDLE FOR CARTON

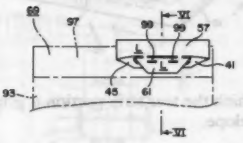
William A. Hester, Memphis, Tenn., assignor to Eastex Packaging Inc., Oak Brooke, Ill.

Filed June 17, 1970, Ser. No. 47,014

Int. Cl. B65d *5/46*

U.S. Cl. 229—52 AL 5 Claims

A preformed foldable blank made of pliable sheet material, e.g., polyethylene coated boxboard, made use of in forming a bail-like handle that is attached to a gabled top carton for packaging various products. The blank includes a plurality of panels formed by various predetermined fold lines. Folding the blank in a predetermined sequence along the fold lines provides a retracted handle which is fixedly attached to the crown of the carton by staples. The handle remains retracted while the carton is processed through the normally automatic casing and filling sequence, while stored and while being transported before use. The user, e.g., retail customer, ex-



pands or opens the handle at the time of purchase for the purpose of conveniently carrying the carton. Breakaway tabs provide reinforcement of the attachment means of the handle to the carton and hold the handle in its retracted form prior to use. The breakaway tabs are separated from the remaining structure by the user prior to expanding the handle.

3,627,195

ENVELOPE BLANK

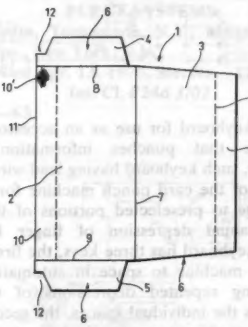
Kurt Hauer, Warmbronn/Wuertenberg, Germany, assignor to Ernst Hauer &Co., Stuttgart, Germany

Filed Sept. 12, 1969, Ser. No. 857,372

Claims priority, application Germany, Sept. 14, 1968, P 17 86 310.4

Int. Cl. B65d *27/18*

U.S. Cl. 229—68 R 5 Claims



An envelope blank of predetermined configuration is made from sheet material. An enclosure for an envelope to be made from the blank is placed onto the latter in predetermined orientation with reference to the same. Thereupon, the blank is converted into a finished envelope containing the enclosure. The blank is also disclosed.

3,627,196

MACHINE OPENABLE ENVELOPE

William W. Smith, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.

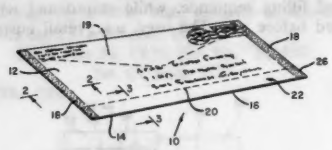
Original application May 2, 1968, Ser. No. 726,176. Divided and this application Dec. 29, 1969, Ser. No. 1,938

Int. Cl. B43m *7/00*

U.S. Cl. 229—85 4 Claims

An envelope having front and back panels defining a cavity therebetween with lines of weak tear strength extending longitudinally across each panel from one side edge to the other overlapping the cavity so that when the lower tear strip portion of the envelope is removed, any contents within the envelope will be exposed sufficiently for gripping along that portion thereof which projected into the tear strip cavity, and

restricting means to prevent contents within the tear strip cavity from intruding between front and back panels in an



area about which the tear strip portion is gripped for severing from the envelope.

3,627,197

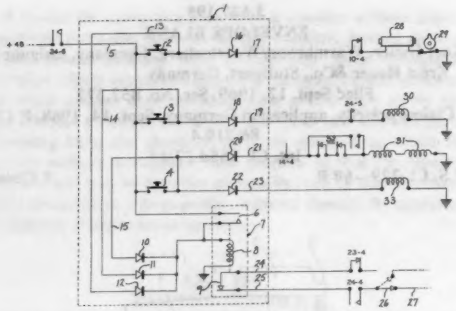
AUXILIARY KEYBOARD FOR CARD PUNCH MACHINE

Daniel J. Stevens, 2690 S. Stoughton Road, Madison, Wis.

Filed Oct. 15, 1969, Ser. No. 866,672

Int. Cl. G06k *1/08*

U.S. Cl. 234—18 **2 Claims**



An auxiliary keyboard for use as an accessory to a card punch machine that punches information into data processing cards, such keyboard having lead wires connected into the circuit of the card punch machine for applying an operating voltage to preselected portions of the circuit in response to manual depression of finger keys of the keyboard. The keyboard has three keys, the first for causing the card punch machine to space in automatic succession without requiring repeated depressions of the key for traversing across the individual spaces, the second for causing the machine to skip spaces at a higher rate than the first key, and the third being for operating the duplicating function of the machine at a greater rate than ordinarily achieved when the machine is in its manual mode of operation.

3,627,198

SINGLE CONTROL DEVICE FOR STARTING THE MULTIPLICATION AND DIVISION OPERATIONS IN CALCULATING MACHINES

Gian Piero Barozzi, and Giancarlo Horeschi, both of Crema, Italy, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

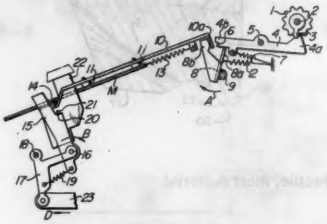
Filed Oct. 12, 1970, Ser. No. 080,023

Claims priority, application Italy, Feb. 11, 1970, 20471-A/70

Int. Cl. G06c *15/08, 21/04*

U.S. Cl. 235—63 E **4 Claims**

A device for selectively starting the calculating operations of multiplication and division mechanisms of a calculating machine having a single "=" key held in operative connection with the multiplication mechanism. A pivotable link mechanism having one end held in operative connection with the division mechanism is held by a spring in operative connection at the other end with the "=" key only when a multiplicand is not set on the machine to thereby connect the "=" key with the division mechanism. A rod is provided for operation, in response to a multiplicand setting motion of register, to disengage the link mechanism and hence the division mechanism from the "=" key whereby a multiplication operation is prepared to start.



3,627,199

ANNEALING TIME CALCULATOR

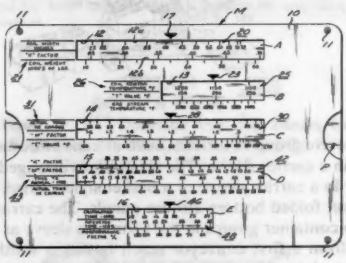
Robert R. Hill, Westlake, Ohio, assignor to Lee Wilson Engineering Company, Inc., Cleveland, Ohio

Continuation-in-part of application Ser. No. 9,896, Feb. 9, 1970, now abandoned , which is a continuation-in-part of application Ser. No. 764,192, Oct. 1, 1968, now abandoned.

This application May 18, 1970, Ser. No. 38,135

Int. Cl. G06c *3/00, 27/00*

U.S. Cl. 235—85 **21 Claims**



A calculator for determining the minimum length of time to operate an annealing furnace, such as a hood or bell-type, to anneal a charge of coils of strip metal, some of which may have different sizes or weights, wherein a plurality of interrelated slide rule type scales cooperate to determine and indicate the minimum annealing time sought.

Optionally, the calculator may have other scales, such as a scale to account for the difference between the temperature to be reached at the center of the coils and the temperature of the surrounding heating medium; or a scale to compensate for difference in types or efficiencies of furnaces, types of steel, and the like.

3,627,200

MECHANICAL GOLF HANDICAPPER

Jesse W. Sadler, P. O. Box 489, Richland, Wash.

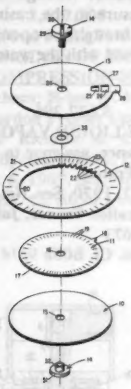
Filed Aug. 19, 1970, Ser. No. 65,028

Int. Cl. G06c *3/00*

U.S. Cl. 235—88 **3 Claims**

A circular slide rule to mechanically determine golf handicaps. Circular scales are arranged on two discs adjustably

mechanically related by a particular course par score to allow the reading of a golfer's handicap through one finder



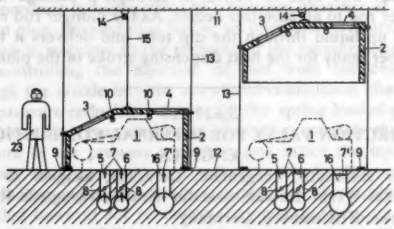
window when his score be arrayed under a second finder window both defined in a third disc.

3,627,201

ATMOSPHERE CONTROL ARRANGEMENT FOR MACHINERY

Ernst Partsch, Felsenau 128, Frastanz, 6820 Vorarlberg, Austria

Filed Apr. 28, 1969, Ser. No. 819,643
Claims priority, application Austria, Apr. 30, 1968, A4179/68
Int. Cl. D03d *49/00*; F23j *11/02*
U.S. Cl. 236—44 **6 Claims**



The automatic weaving looms of a textile plant are individually enveloped by hoods of acoustical insulation material suspended from hoists and sealingly engaging the floor about the associated machines. Air at controlled temperature and humidity is supplied to the interior of each hood and exhausted from that interior through a system of manifold pipes having orifices in the floor under each hood, and valves in the orifices which open automatically as the hood descends into the operative position and close when the hood is lifted.

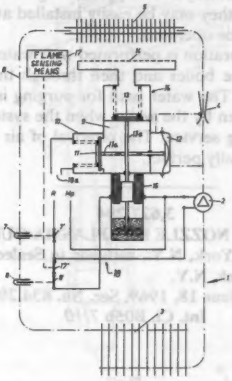
3,627,202

FORCED CIRCULATION GAS WATER HEATER

Hans Meier, Remscheid, Germany, assignor to Joh. Vaillant KG, Remscheid, Germany

Filed Feb. 13, 1970, Ser. No. 11,125
Claims priority, application Germany, Feb. 18, 1969, P 19 08 071.8
Int. Cl. F24d *3/02*
U.S. Cl. 237—8 **4 Claims**

A gas valve for the burner of a water heater is L-shaped with valves in each branch of the L. Push rods, positioned at right angles to each other, respectively operate the valves. One rod is actuated by an electromagnet and the other by a fluid pressure responsive diaphragm connected to a venturi. The venturi is in a water circuit that includes the heater, two



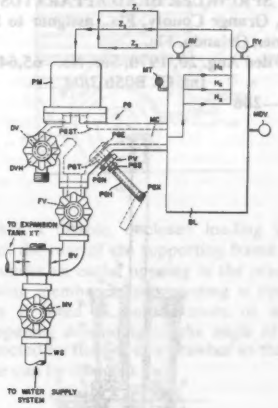
temperature-limiting thermostats, a radiator and a circulating pump. An electrical circuit has two branches; one of which includes a switch controlled by one thermostat and the circulating pump motor; and the other of which includes switches controlled by both thermostats and the electromagnet.

3,627,203

PURGE SYSTEMS

Allan E. Martin, Tonawanda, N.Y., assignor to American Standard Inc., New York, N.Y.

Filed Apr. 13, 1970, Ser. No. 27,515
Int. Cl. F24d *3/02*
U.S. Cl. 237—63 **8 Claims**



Covers a hot water heating system employing a purge valve structure and other structural components which are affixed to each other and to the boiler system. The purge valve structure includes a slide valve mechanism which may be locked and sealed in its normal or open position and, when locked, the accidental closure of the purge valve structure is rendered impossible. To close the purge valve structure when the purging operation is to be performed, a handle affixed to the stem of the valve must first be released from its locked open position and, upon the release of the handle, the valve stem may be pushed to the closed position. When the valve is thus closed, the boiler and the hot water system may be

purged and thereafter filled with water for the normal operation of the system. The purge valve structure provides a seat for the pump (sometimes called a "circulator"), and it provides a housing for a drain valve and for a fill valve. The purge valve structure and these several components may be assembled at the factory and shipped along with the boiler as a package so that they may be easily installed at the building where they are to be operated.

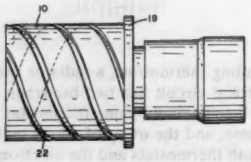
The purging operation is performed with water flowing upwardly through the boiler and then through the rest of the hot water system. The water path for purging is in the same direction as is taken by the water when the system is providing normal heating service. The removal of air from the entire system is virtually perfect.

3,627,204

SPRAY NOZZLE FOR PLASMA GUNS

Mille Stand, New York, N.Y., assignor to Sealectro Corporation, Mamaroneck, N.Y.

Filed June 18, 1969, Ser. No. 834,293
Int. Cl. B05b *7/10*
U.S. Cl. 239—81 **5 Claims**



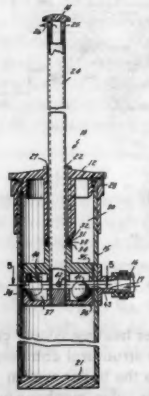
A spray nozzle having a series of helical grooves cut in the outside surface of the nozzle in order to shape and confine the flame ejected from the interior of the gun. The force of the flame draws air through the grooves and thereby provides a helical shield which prevents the flame from spreading and makes it more stable.

3,627,205

SPRINKLER HEAD APPARATUS

Mark Healy, Orange County, Fla., assignor to Senninger Irrigation, Inc., Orlando, Fla.

Filed Aug. 20, 1970, Ser. No. 65,647
Int. Cl. B05b *3/04*
U.S. Cl. 239—206 **7 Claims**



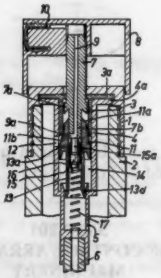
A sprinkler head apparatus is provided having a casing adapted to be connected to a waterline in which the casing has a tube passing through the top thereof with a nozzle on the end exterior to the casing and a raceway attached to the other end of the tube inside the casing. The raceway is circular and has a ball therein and has a protrusion extending from the top in a manner so that the ball following the raceway will be raised by the centrifugal force and will collide with the protrusion. The ball is pushed by the water entering the water inlet in the side of the casing tangential to the raceway. The water thereafter passes through the tube and out the nozzle. The water pressure in the casing is also adapted to force the tube to slide through the opening in the casing until the raceway becomes level with the water inlet.

3,627,206

DIP-TUBE LIQUID VAPORIZERS

Michel Boris, Paris, France, assignor to Societe Technique De Pulverisation, Paris, France

Filed July 7, 1970, Ser. No. 52,881
Claims priority, application France, July 7, 1969, 6922664 Mar. 26, 1970, 7011073
Int. Cl. B05b *9/04*
U.S. Cl. 239—321 **11 Claims**



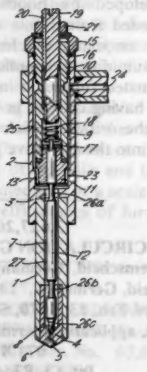
A dip-tube vaporizer has a cylinder in which a piston member is slidable. The interior of the cylinder communicates through a slide-valve-controlled opening with a chamber formed between the piston and the cylinder wall. The chamber is filled by a previous stroke so that when a plunger rod is depressed a shoulder thereon engages the piston and the latter acts to pressurize the liquid in the chamber and thus to deliver it through a passage in the plunger rod to an atomizer nozzle. As the plunger rod rises it draws up liquid through the dip tube and delivers it to the chamber ready for the next dispensing stroke of the plunger.

3,627,207

INJECTION VALVE FOR INTERNAL-COMBUSTION ENGINES

Gunter Hohmuth, Lengenfeld, Germany, assignor to VEB Barkas-Werke Ifa-kambinatsfur Kraflfahrzeugteile Renak-Werke, Reichenbach, Germany

Filed July 30, 1970, Ser. No. 59,498
Int. Cl. B05b *1/30*
U.S. Cl. 239—533 **3 Claims**



An internal-combustion engine fuel injection valve is so constructed that the fuel cools the valve needle and the un-

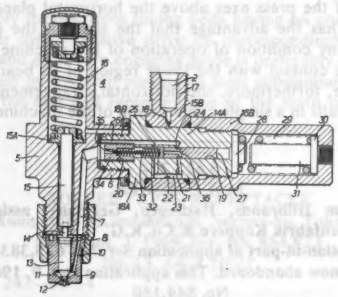
seating pressure and the stroke of the needle are independently adjustable.

3,627,208

FUEL INJECTION APPARATUS FOR INTERNAL COMBUSTION ENGINES OF THE LIQUID-FUEL-INJECTION COMPRESSION-IGNITION TYPE

William M. Scott, Patcham; Brian W. Millington, North Lancing, and Royston Gordon Freese, Upper Beeding, all of England, assignors to Ricardo & Co., Engineers (1927) Limited, Shoreham-by-Sea, Sussex, England

Filed Oct. 6, 1969, Ser. No. 864,123
Int. Cl. B05b *1/30*
U.S. Cl. 239—533 **13 Claims**



A fuel injection system for an internal combustion engine of the liquid-fuel-injection compression-ignition type, having a fuel pump arranged to deliver fuel under supply pressure via a pressure-reducing valve to a pressure chamber of an injection plug, the said plug having an injection valve arranged to open in response to the pressure in the pressure chamber and controlling the injection of fuel from the chamber through the nozzle into the associated combustion chamber. The pressure-reducing valve is of the spring-loaded-piston variable-orifice type and when operative controls the fuel pressure in the pressure chamber, and hence the injection pressure, to a predetermined reduced value for the purpose of reducing engine noise during periods of idling. Means is provided however for rendering the pressure-reducing valve inoperative when full injection pressure is required, either by bypassing the pressure-reducing valve altogether so that the fuel pump delivery passes directly to the pressure chamber throughout the whole of each pump delivery stroke, or by bypassing the restricted orifice of the pressure-reducing valve during the final stage only of each delivery stroke of the fuel pump. In either case the bypassing means may be operated by a running control member of the engine, for example a fuel or speed control member.

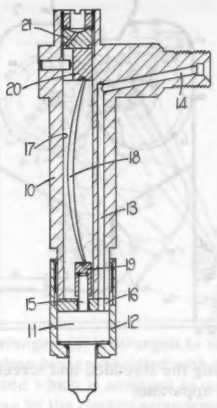
3,627,209

LIQUID FUEL INJECTION NOZZLE UNITS

Peter Frank Scott, Kingston-Upon-Thames, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Oct. 23, 1969, Ser. No. 868,760
Claims priority, application Great Britain, Nov. 14, 1968, 54,067/68
Int. Cl. B05b *1/30*
U.S. Cl. 239—533 **1 Claim**

A liquid fuel injection nozzle unit including an elongated body part to which at one end, is secured a nozzle head which incorporates a valve member movable by the pressure of fuel supplied through an inlet, the valve member moving against the action of a resilient means. The resilient means takes the form of a bowed leaf spring which is accommodated within a chamber formed in the body part of the nozzle unit.

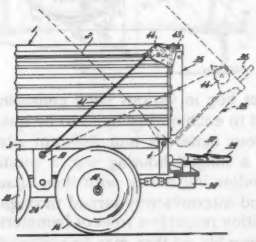


3,627,210

WAGONS

Cornelis van der Lely, 7, Bruscherain, Zug, Switzerland

Filed Mar. 28, 1969, Ser. No. 811,383
Claims priority, application Netherlands, Mar. 29, 1968, 68,04406
Int. Cl. A01c *19/00*
U.S. Cl. 239—657 **28 Claims**



A wagon has a tiltable, enclosed loading space which pivots adjacent the rear of the supporting frame. A spreader is positioned under an outlet opening in the rear wall of the space. A closing member in the opening is opened as the loading space is tilted to unload more or less material through the opening depending on the angle of tilting. The frame is connected by flanges to a drawbar so that the height of the drawbar can be changed.

3,627,211

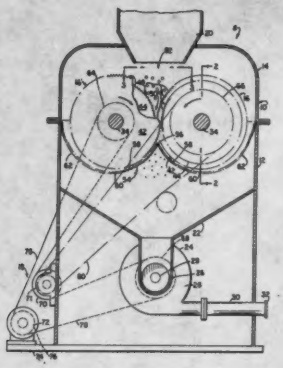
METHOD AND APPARATUS FOR SHREDDING FOAM

Irby H. Leach, 2094 Emerson, Napa, Calif.

Filed July 25, 1969, Ser. No. 844,896
Int. Cl. B02c *18/22, 18/44*
U.S. Cl. 241—3 **10 Claims**

Foam, such as foamed beads, are shredded into irregularly shaped particles having random and irregular exterior surfaces, tears and ragged edges to rupture and open a substantial number of the foam cells. The foam beads are passed between relatively moving, opposing shredding surfaces including toothlike serrations. Oversize shredded particles are separated on a screen from which they are recycled for

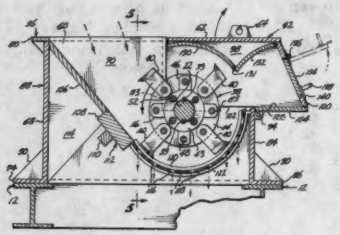
reshredding and size reduction. The apparatus also includes structure for feeding the foam beads to the shredding surfaces and collecting the shredded and screened particles for removal from the apparatus.



3,627,212
HAMMER HOG

James H. Stanton, 4211 43rd Ave. N.E., Seattle, Wash.

Filed Nov. 24, 1969, Ser. No. 879,074
Int. Cl. B02c *13/16, 13/04*
U.S. Cl. 241—73 **1 Claim**



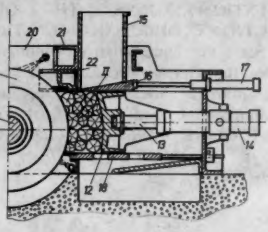
A hammer hog in various sized embodiments is arranged with respect to each embodiment to be quickly converted to reduce various materials into different sizes. After a quick pivoting of a hinged housing top, a rotatable assembly of hammers and/or impactors, with their spacers, etc., is conveniently and intermittently turned through a partial revolution, to position respective rows of hammers at the top of the rotatable assembly, so they may be replaced and/or repaired, without the need for removing this rotatable assembly from the hammer hog. If a complete interchange of the rotatable assembly is ever desired, after adjustment of the bearings and a coupling, it is conveniently lifted straight up to clear the housing. Likewise, a sizing screen is quickly replaced, as necessary, to match the reduction performance sought upon change of the hammers and/or impactors. Moreover, an anvil is readily replaced without necessitating any change in the housing of the hammer hog. In addition, main power units are quickly substituted and modified.

3,627,213
GRINDING MACHINE

Helmut Thumm, and Willy Schaich, both of Heidenheim, Germany, assignors to J. M. Voith GmbH, Heidenheim, Germany

Filed Nov. 21, 1969, Ser. No. 878,790
Claims priority, application Germany, Nov. 27, 1968, P 18 11 187.0
Int. Cl. B02c *4/00*
U.S. Cl. 241—151 **5 Claims**

The specification discloses a two-press grinding machine for the reduction of wood to small particle sizes. A grinding wheel is fixed to a horizontal shaft and is rotated thereby. Two presses are provided on opposite sides of the wheel to press logs of wood against the periphery of the grinding wheel and the axes of the presses are horizontal and are located above the axis of rotation of the grinding wheel. The

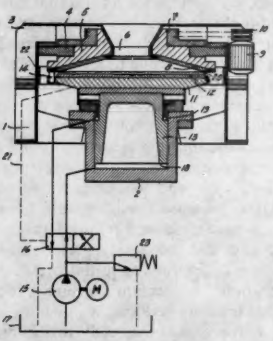


location of the press axes above the horizontal plane of the shaft axis has the advantage that the shaft of the grinding wheel in any condition of operation of the machine will always make contact with the lower region of its bearing surfaces while, furthermore, the horizontal arrangement of the presses results in a simple construction of the machine.

3,627,214
JAW CRUSHER

Jan Willem Hilbrands, Hattingen, Germany, assignor to Maschinenfabrik Koppern & Co. K.G.

Continuation-in-part of application Ser. No. 625,383, Mar. 23, 1967, now abandoned. This application Oct. 9, 1969, Ser. No. 844,150
Claims priority, application Germany, Apr. 4, 1967, M68874
Int. Cl. B02c *1/02, 7/08, 19/00*
U.S. Cl. 241—205 **27 Claims**



A jaw crusher consists of two opposing plate-shaped jaws, one of which is axially immovable but which may be rotated, the other jaw being hydrostatically mounted for both axially reciprocatory motion as well as rotary motion.

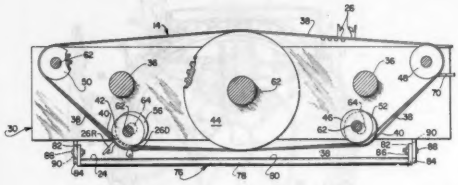
3,627,215
STRAND-HANDLING EQUIPMENT

Hans H. Richter, Warwick, R.I., assignor to Leesona Corporation, Warwick, R.I.

Continuation-in-part of application Ser. No. 724,875, Apr. 29, 1968, now abandoned. This application Feb. 3, 1969, Ser. No. 801,232
Int. Cl. B65h *54/28*
U.S. Cl. 242—43 **38 Claims**

Strand-traversing mechanism having a pair of oppositely traveling belts each with yarn-engaging guides for moving the yarn along a traversal path with effectively uniform controlled movement and transferring the yarn to an oppositely moving guide at reversal ends of the path. During transfer of

the yarn from one guide to another, the portions of the belts on which the guides are mounted are directly supported on pulleys which steady the guides. Pulleys intermediate the traversal path further steady the guides and cause the guides to move to and fro across the strand of yarn for effectively preventing grooving of the guides. The traverse belts are



preferably formed from timing belts having on one belt face teeth for direct positive drive by correspondingly notched pulleys and each yarn engaging guide is preferably connected to its belt by a clamp passing at least substantially entirely around the belt and replacing one of the teeth on the belt face.

3,627,216

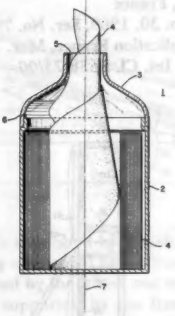
ROLLED PAPER RECEPTACLE

Kenji Ekuan, 308-1 Kamishakujii, Nerima-ku, Tokyo, Japan

Filed Sept. 3, 1969, Ser. No. 854,823

Int. Cl. A47k *10/22*

U.S. Cl. 242—55.54 **4 Claims**



A rolled paper receptacle comprising a cylindrical container in which may be placed a coreless roll of paper, and a cover in the shape of an inverted funnel with an opening aligned with the axis of the container, through which the paper may be removed continuously from the inside of the roll.

3,627,217

REEL STANDS

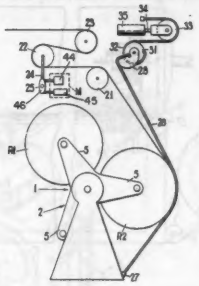
Noel John Baker, London; Roy Bevan, Hertfordshire, and Cyril Henry Drew, Stanmore, all of England, assignors to Witten-James Limited, Wembley, England

Filed Aug. 27, 1969, Ser. No. 853,338

Int. Cl. B65h *19/10*

U.S. Cl. 242—58.1 **10 Claims**

A reel stand for supporting reels on which can be wound webs of paper, metal foil, polythene film or like material, comprises a pair of supporting arms between which two reels are supported for independent rotation about a common axis, while webs are drawn from the reels simultaneously and a web-tensioning system incorporating an arrangement common to the webs for monitoring the web tension and producing a controlled output dependent on the combined tension in the webs. Each reel has a tension strap which engages its peripheral surface, and a control arrangement responsive to



the monitoring arrangement is arranged to vary the tension in the straps, each strap being associated with a cam over which the strap passes and which is arranged to modify the tension applied to the strap by the control arrangement.

3,627,218

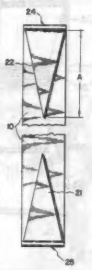
AUXILIARY STRIP TO FACILITATE THE WINDING OF AN ELONGATED STRIP UPON A TAKEUP LEVER

Charles T. Feldschau, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 13, 1969, Ser. No. 832,965

Int. Cl. B65 *75/00*

U.S. Cl. 242—67.1 **4 Claims**



An auxiliary strip of flexible material for disposing consecutive windings of an elongated strip onto a takeup core. The auxiliary strip is secured to the elongated strip to extend a distance therewith and is of such configuration to form a simulated crown as the auxiliary strip is being wound about the takeup core, which in turn positions and prevents the axial shifting of the elongated strip with respect to the takeup core.

3,627,219

INK-RIBBON FEEDING AND REVERSING ASSEMBLY

Franklin H. Hanson, Round Lake, and Spencer C. Heynis, Island Lake, both of Ill., assignors to SCM Corporation, New York, N.Y.

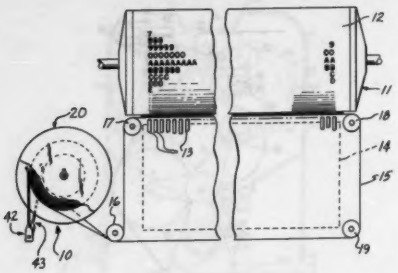
Filed June 11, 1969, Ser. No. 832,390

Int. Cl. B65h *17/02*

U.S. Cl. 242—67.4 **11 Claims**

There is disclosed a data recorder in the form of a drum printer, together with an ink-ribbon feeding and reversing assembly for an ink-ribbon which is used in data recording. The assembly includes a first clutch member for driving a first ribbon carrier, a second clutch member for driving a second ribbon carrier, and a third clutch member mounted on a drive shaft for rotation with the drive shaft but pivotal into

clutching and driving engagement with either the first clutch member or the second clutch member. The third clutch member includes a permanent magnet driver which



cooperates alternately with the first clutch member and with the second clutch member. Sensing and actuating members control switching of the third clutch member.

3,627,220

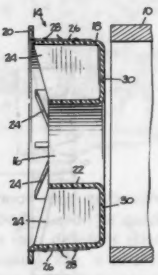
PROTECTIVE END CAP CONSTRUCTION

Walter G. Vogel, 1827 Haight Ave., Bronx County, N.Y., assignor Poly Guard, Inc., Yonkers, N.Y.

Continuation-in-part of application Ser. No. 817,875, Apr. 21, 1969, now abandoned. This application Feb. 9, 1970, Ser. No. 9,829

Int. Cl. B65d *85/67*; **B65h** *19/00*

U.S. Cl. 242—68.6 **14 Claims**



Protective single- and double-end caps which fit into the ends of a hollow paper core about which sheet material is wound and having splines which accommodate variations in core diameter and toothlike projections superimposed on the splines to provide a barblike holding action.

3,627,221

PAPER ROLL SHIPPING PLUG

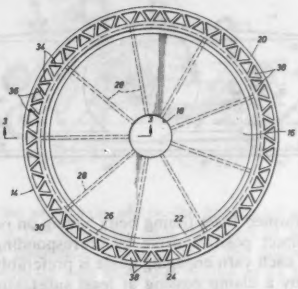
Tarry W. Nichols; Robert L. Nichols, and Marion A. Kirby, all of 1022 S. Bolton, Jacksonville, Tex.

Filed Jan. 16, 1970, Ser. No. 3,320

Int. Cl. B65h *75/02*

U.S. Cl. 242—68.6 **8 Claims**

A paper roll shipping plug formed of molded plastic material for insertion in the ends of a central tube in a paper roll and having a disklike central portion and a peripheral rim portion of channel shape in cross section surrounding the disk portion and to whose inner wall the disk portion is connected. The disk portion is positioned in a plane located mediate the ends of the inner wall of the rim and connected to the edge of the inner wall at the open end of the channel by an inner bevelled annular wall portion and an outer annular wall portion disposed in a plane parallel to the plane of the disk portion. The rim portion has inner crosswebs disposed in angular relation to radii of the plug and forming generally triangular cells open at the open end of the channel, and the outer wall of the rim has a bevelled portion at the closed end of the channel forming a taper for insertion into the end of the central tube of a paper roll. Radially extending webs or fins are provided connecting the disk portion with the inner wall of the rim and which taper radially inwardly of the disk portion.



The device thus constructed forms a strong and durable plug which has sufficient resiliency to allow it to be readily driven into the end of the central tube of a paper roll while providing sufficient rigidity to maintain the plug in tight engagement with the inner surface of the tube.

3,627,222

CLUTCH DEVICE FOR LINEAR MEASURING INSTRUMENTS WITH TAPE

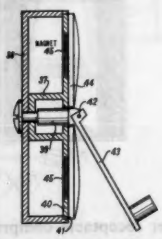
Andre Quenot, Besancon, France, assignor to Quenot & Cie S.a.r.L., Besancon, France

Filed Jan. 30, 1969, Ser. No. 798,857

Claims priority, application France, Mar. 18, 1968, 144243

Int. Cl. B65h *75/00*

U.S. Cl. 242—84.8 **8 Claims**



In a clutch device for linear measuring instruments, at least one of the driving and driven elements is equipped with magnetic members which can become secured against ferromagnetic members on the other element, wherein the driven and driving elements can be provided with antiskid means.

3,627,223

SPINNING REEL WITH WINDING DRUM BRAKE

Pierre Monthulet, Cluses, France, assignor to Carpano & Pons, Cluses, France

Filed Nov. 26, 1968, Ser. No. 778,951

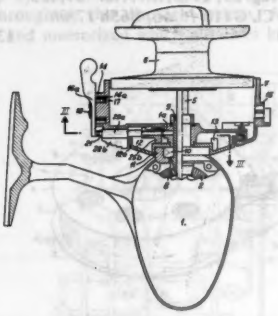
Claims priority, application France, Dec. 12, 1967, 132272

Int. Cl. A01k *89/02*

U.S. Cl. 242—84.2G **4 Claims**

This spinning reel has a winding drum rotated about a normally stationary spool to wind line thereon, and includes a pickup bail pivoted on the drum and spring biased form a casting position clear of the line to a winding position where it engages the line. When placed in the casting position a

slidable plunger retains the pickup in casting position while ans associated spring biased, friction brake is applied to prevent accidental rotation of the winding drum. When it is

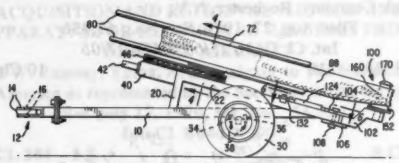


desired to wind in the line, rotation of the winding drum causes a stop member to shift the plunger and thereby remove the friction brake application and permit the biased pickup to move to its winding position.

3,627,224
REEL DEVICE

Richard E. Diggs, 210 N. River St., P.O. Box 588, Carthage, Mo.

Filed Jan. 5, 1970, Ser. No. 595
Int. Cl. B65h *75/40*
U.S. Cl. 242—86.2 **13 Claims**



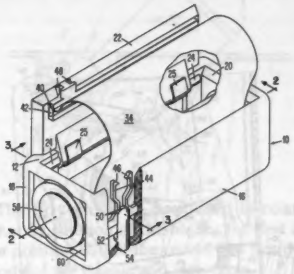
A frame means is supported by wheels mounted on an axle which is removably connected to the frame means. Reel support means is carried by the frame and is drivingly connected with drive means supported by the frame means. The reel support means includes a plurality of drive members. A removable reel has means for receiving said drive members to provide a driving connection therewith. A rotatable guide portion is mounted in spaced relationship to the reel. The guide means is mounted on a support portion which is pivotally connected with the frame means, and locking means is provided for locking the support portion in desired operative position.

3,627,225
RECORD MEMBER CONTAINER

Paul J. Badum, Boulder, Colo., and Henry Zeiger, New Caanan, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of application Ser. No. 790,709, Nov. 13, 1969, now abandoned. This application July 30, 1970, Ser. No. 59,668
Int. Cl. G11b *15/58, 23/10*
U.S. Cl. 242—182 **13 Claims**

A container for a record member of the flexible web type which includes a box having one wall hinged to provide an openable cover. A single reel may be journaled for free rotation on an axis parallel to the plane of the cover wall. The record member is wound on the reel with its inner end firmly secured to the reel and its outer end firmly secured to the cover at a point spaced from the hinged edge of the cover. Other means of web retention may be used. Drive connection means for the reel are provided through the container to per-

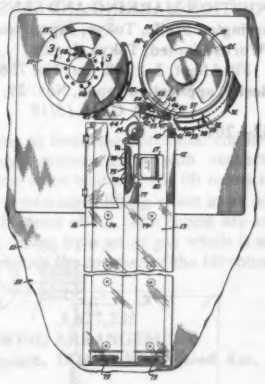


mit the record member to be reeled or unreeled as required while the ends remain secured. The invention also includes the combination of the container with a record handling system having a processing chamber into which the portion of the member intermediate its ends may be inserted.

3,627,226
SYSTEM FOR AUTOMATIC THREADING OF AN ELONGATED FLEXIBLE MEDIA

Ralph E. Setter, Oklahoma City, Okla., assignor to Honeywell Information Systems Inc.

Filed Feb. 19, 1970, Ser. No. 12,590
Int. Cl. G11b *15/58, 15/66*
U.S. Cl. 242—185 **16 Claims**



An automatic tape- or film-threading system for use on a tape transport including means for directing a tape leader from a file reel onto a machine reel and into vacuum buffer bins. To accomplish the tape-controlling objectives, a novel fluid-operated system is controlled by sensing devices for determining tape position during threading operations.

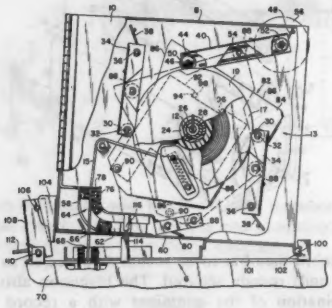
3,627,227
LIGHTTIGHT FILM MAGAZINE

Sanford W. Foor, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 30, 1969, Ser. No. 872,572
Int. Cl. G03b *1/04;* **G11b** *15/32, 23/04*
U.S. Cl. 242—197 **9 Claims**

A lighttight film magazine for use with a film receptor, such as a processor or the like, having one or more pressure

rollers engageable with a film spool mounted in the magazine to accomplish one or more of the following functions, namely (1) controlling axial movement of the spool, (2) imposing the required frictional drag on the spool to control film tension, and (3) sensing film spool rotation and film transport to the film receptor. The magazine has a light-lock mechanism



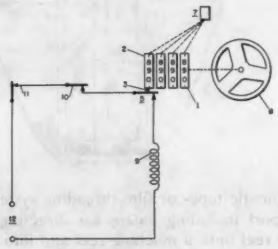
at the magazine exit movable from a normally closed, light-locked position to an open position by cooperating apparatus on the film receptor when the magazine is mounted thereon. When unmounted, a cam mechanism on the magazine moves the pressure roller to a spool disengaged position, and the light-lock mechanism to its open position to permit loading of the magazine.

3,627,228

TAPE POSITION MARKING AND SENSING DEVICE

Earnest Carrington Wolfe, Tokyo, Japan, assignor to Tamura Electric Works Limited, Tokyo, Japan

Filed Sept. 3, 1968, Ser. No. 756,911
Claims priority, application Japan, Nov. 29, 1967, 42/76178
Int. Cl. G11b *15/18*
U.S. Cl. 242—201 **3 Claims**



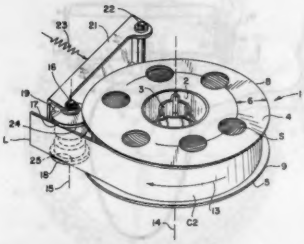
A tape position sensing and control device operates in conjunction with a multidigit tape position counter which is adapted to reset through the null position, i.e., between 0000 and 9999 and derive a control signal such as a switch closure from the nine position on the most significant digit dial of the counter. By pressing the reset button a particular position of the tape is identified and thereafter in conjunction with other controls such as rewind or repeat the return of the tape to the marked position generates a control signal which can be used to control the tape drive.

3,627,229

STRIP-FEEDING APPARATUS AND METHOD

Elmer O. Wangerin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 27, 1970, Ser. No. 67,455
Int. Cl. G11b *15/66;* **B65h** *17/06*
U.S. Cl. 242—210 **13 Claims**



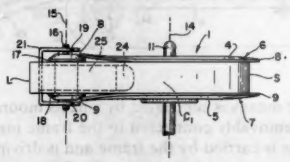
The outermost convolution of a roll of strip material is transversely compressed by the opposed flanges of a reel on which such strip is wound. Upon rotation of the reel about the roll axis, a roller arm temporarily flexes successive opposed regions of the flanges away from each other as such regions are respectively rotated therepast. Such local flexing of the flanges releases corresponding successive portions of the outermost convolution of strip material on the reel from transverse compression and effects a separation and feeding of the leading strip end from the rotating roll.

3,627,230

APPARATUS FOR FEEDING STRIP MATERIAL

Elmer O. Wangerin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 27, 1970, Ser. No. 67,456
Int. Cl. G11b *15/66;* **B65h** *17/06*
U.S. Cl. 242—210 **10 Claims**



The outermost convolution of a roll of strip material is restrained from unwinding by transverse engagement with the opposed flanges of a reel on which such strip is wound. Upon rotation of the reel about the roll axis, a roller arm temporarily flexes successive opposed regions of the flanges away from each other as such regions are respectively rotated therepast. Such local flexing of the flanges releases corresponding successive portions of the outermost convolution of strip material on the reel from transverse engagement therewith and effects, by a strip guider member on the roller arm, separation and feeding of the leading strip end from the rotating roll.

3,627,231

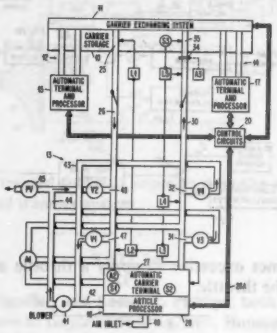
ARTICLE CARRIER TRANSFER AND TRACKING SYSTEMS

Clement H. Kalthoff, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 14, 1970, Ser. No. 54,710
Int. Cl. B65g *51/04, 51/36*
U.S. Cl. 243—16 **9 Claims**

An article in a carrier, such as magnetic media, is pneumatically dispatched through an incoming pneumatic tube to

an automatic carrier terminal. The carrier is automatically unloaded with the article being processed. Upon completion of the processing, the carrier terminal supplies the carrier with the article therein through an outgoing tube to be picked up by a carrier exchanging system. The carrier is tracked throughout the dispatch system. A status byte is generated and memorized which indicates location of every



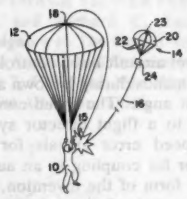
carrier in a system. This tracking system is applicable not only to pneumatic dispatch systems but to other article carrying systems as well. A plurality of dispatch systems operate with one carrier exchanging system. A common control circuit controls article processing, the carrier exchanging system, the automatic carrier terminals and pneumatic dispatching.

3,627,232

ACQUISITION AND RETRIEVAL METHOD AND APPARATUS FOR RECOVERING EJECTEES FROM DISABLED AIRCARFT

James W. Ramsay, Yuma, Ariz., assignor to The United States of America as represented by the Secretary of the Navy

Filed July 17, 1970, Ser. No. 55,795
Int. Cl. B64d *17/00*
U.S. Cl. 244—1 R **8 Claims**



A method for snaring the inflated parachute of an ejectee while descending from a disabled aircraft by an accompanying high-speed aircraft and towing the parachute and the suspended aircrewmen to a safe recovery area where the parachute and its load is released to resume its normal free descent into the safe area for rescue by conventional means.

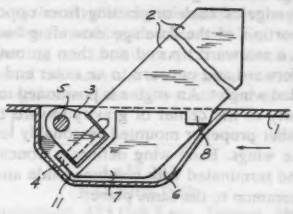
3,627,233

FIN DEVICE FOR MISSILE

Gunnar Jacobson, and Olof Bertil Olsson, both of Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Filed Oct. 24, 1969, Ser. No. 869,101
Claims priority, application Sweden, Nov. 1, 1968, 14.844/68
Int. Cl. F42b *15/16*
U.S. Cl. 244—3.27 **7 Claims**

A stabilizing fin for a missile. One end of the fin is mounted in a hingelike fashion on a holder so that the fin can be folded in relation to the holder about a first axis parallel with the leading edge of the fin. The holder is mounted in a recess in the body of the missile and is rotatable about a second axis at right angles to the longitudinal extension of



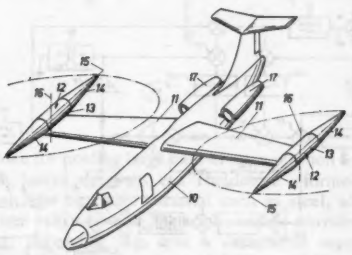
the missile. The first axis is so positioned in relation to the second axis that by rotation of the holder the first axis can be moved from a position within the recess to a position entirely outside the body of the missile and vice versa.

3,627,234

AIRCRAFT WITH LIFT ROTORS

Dietrich Dziallas, Bremen, Germany, assignor to Vereinigte Flugtechnische Werke-Fokken GmBH, Bremen, Germany

Filed July 24, 1970, Ser. No. 58,005
Int. Cl. B64c *27/22*
U.S. Cl. 244—7 A **16 Claims**



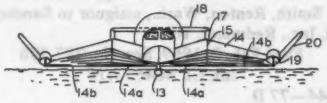
An aircraft having at least one horizontal engine unit and lift rotors disposed symmetrically with respect to the fuselage. Each of the rotor blades of the lift rotors includes a rotating drum for producing a lifting effect in an air current according to the Magnus effect. The drums are rotated by means of turbines driven by a jet of gas which is simultaneously utilized to produce the rotation of the lift rotors.

3,627,235

WING ARRANGEMENT

Alexander M. Lippisch, 1416 Oakland Road Apt. 6, Cedar Rapids, Iowa

Filed Dec. 3, 1969, Ser. No. 881,676
Claims priority, application Germany, Dec. 7, 1968, P 18 13 311.4
Int. Cl. B64c *3/10*
U.S. Cl. 244—12 R **7 Claims**



A combination air and water and/or land takeoff vehicle that in an amphibious or seaplane version, operates as a boat at low speeds and through a transition state at higher speeds

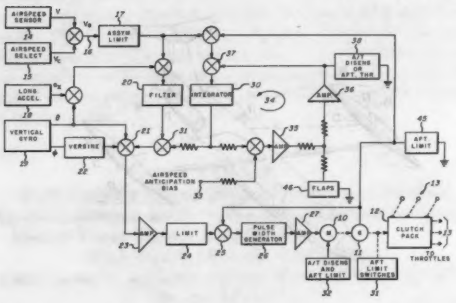
to, at low altitude, as a ground effect flying vehicle, and at higher altitude at sufficient speed as a true aircraft. The vehicle has a center fuselage with two generally, triangularly shaped wings extending one to each side from the fuselage with a rear edge of each originating from opposite sides of the stern portion of the fuselage extending backwards and outward to a rearward tip end and then an outer rear edge extending forward and outward to an outer end auxiliary upwardly angled winglet. An engine is positioned in the fuselage in the vicinity of the center of gravity toward the stern and drives a pusher propeller mounted reasonably low and safely between the wings. Each wing defines a concavity open at the front end terminated with combined side and rear edges, generally, common to the same plane.

3,627,236

AUTOMATIC THROTTLE CONTROL WITH AIRSPEED ANTICIPATION

Richard F. Hess, Scottsdale, Ariz., assignor to Sperry Rand Corporation

Filed June 30, 1970, Ser. No. 51,085
Int. Cl. B64c *13/18*
U.S. Cl. 244—77 D **6 Claims**



Automatic throttle control servomechanism for aircraft of the type employing an integrator for the derivation of throttle position feedback from throttle rate wherein during large changes in airspeed reference commands or during large changes in airspeed reference commands and aircraft flap configurations, an airspeed anticipation bias is introduced into a feedback loop around the integrator in order to effectively increase the initial throttle position reference and thereby prevent undershoots of the commanded reference airspeed.

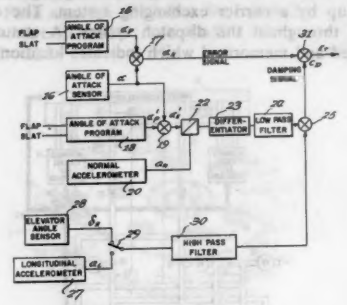
3,627,237

AIRCRAFT THROTTLE CONTROL

Hueray J. Smith, Renton, Wash., assignor to Sundstrand Data Control, Inc., Redmond, Wash.

Filed Feb. 7, 1969, Ser. No. 797,586
Int. Cl. B64c *13/18*
U.S. Cl. 244—77 D **11 Claims**

An automatic throttle control for an aircraft in which the rate of throttle movement is a function of the control signal amplitude. The control signal is modified by a signal transfer means which has a ratio of out-put to input that is a function of signal amplitude and aircraft configuration, as flap position. The control signal is a combination of an error signal and a damping signal. A bypass circuit around the signal transfer means is rendered operative if the underspeed error



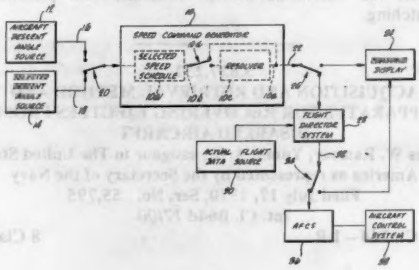
signal becomes excessive to apply a throttle advance signal directly to the throttle.

3,627,238

SPEED COMMAND GENERATION SYSTEM FOR VERTICAL DESCENT CONTROL

Bruce E. Menn, Woodland Hills, Calif., assignor to Lear-Siegler, Inc., Santa Monica, Calif.

Filed May 29, 1969, Ser. No. 829,060
Int. Cl. B64c *13/18*
U.S. Cl. 244—77 D **30 Claims**



A vtol or vistol aircraft has a control system for generating safe speed commands during letdown as a function of instantaneous descent angle. The speed commands generated are preferably fed to a flight director system which produces commanded speed error signals for airborne instrument panel display or for coupling to an automatic flight control system. In one form of the invention, speed commands are derived from a speed schedule wherein desired vector speed is a function of the tangent of the descent angle. In another form of the invention, speed commands are derived from a speed schedule wherein desired vertical speed is a function of the descent angle.

3,627,239

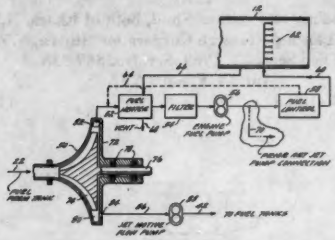
AIRCRAFT ENGINE FUEL SYSTEM

Thomas N. Hull, Jr., Marblehead, Mass., assignor to General Electric Company

Filed Apr. 20, 1970, Ser. No. 30,073
Int. Cl. B64d *37/34*
U.S. Cl. 244—135 R **5 Claims**

An engine fuel system is disclosed for use in conjunction with an aircraft fuel transfer system wherein high-pressure fuel from the engine system is provided to power jet pumps for delivering fuel from the aircraft fuel tanks to the engine and for transferring fuel between two aircraft tanks. The engine fuel system includes means associated with the engine

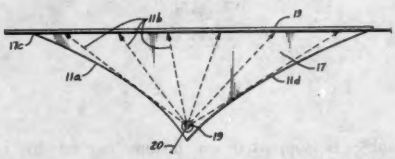
boost pump wherein clean fuel is withdrawn from the boost pump and provided to a jet motive flow pump, which pressurizes the extracted fuel and supplies it to the jet pumps of the aircraft fuel transfer system.



3,627,240
KITE

Julius M. Christoffel, and Lester F. Phillips, both of Houston, Tex., assignors to Gayla Industries, Inc., Houston, Tex.

Filed Nov. 24, 1969, Ser. No. 879,104
Int. Cl. B64c *31/06*
U.S. Cl. 244—153 **5 Claims**

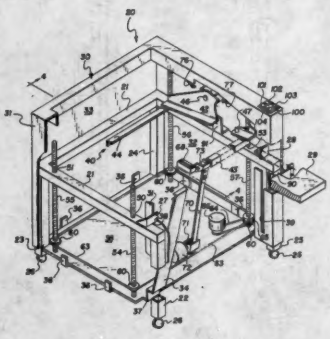


This invention relates to an improved kite having a steadying and guiding keel, the leading edge of which is so shaped as to prevent the direct transmission of tension forces from the kite string to the leading point of the keel's attachment to the kite body, thereby making the keel less likely to tear away from the kite body.

3,627,241
PROJECTED IMAGE VIEWER SUPPORT

Louis J. Santirocco, and Richard C. Lathrop, both of Rochester, N.Y., assignors to The United States of America as represented by the Secretary of Commerce

Filed June 2, 1970, Ser. No. 42,649
Int. Cl. F16m *1/00*
U.S. Cl. 248—11 **7 Claims**

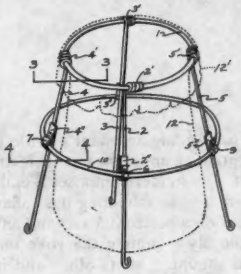


A support for a projected image viewing apparatus of the kind having a screen which displays an image projected thereon for viewing by an observer, is respectively provided with mechanisms for vertically adjusting the apparatus to any one of a plurality of elevations relative to the observer and angularly adjusting the apparatus to any one of a plurality of tilted positions relative to a selected one of the plurality of elevations, so as to vary the elevation and the angle at which the screen can be viewed by the observer. The vertically and angularly adjusting mechanisms are interconnected to maintain the center of the screen at a selected elevation when the apparatus is angularly adjusted to a selected one of the plurality of tilted positions.

3,627,242
BAG HOLDER

Adolph P. Vandermast, 423 Oak Lane, Towson, Md.

Filed Mar. 25, 1970, Ser. No. 22,608
Int. Cl. B65b *67/12*
U.S. Cl. 248—97 **2 Claims**

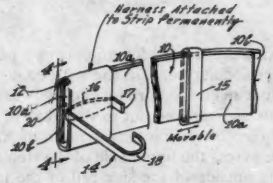


A device for holding large bags in open position for receiving trash, leaves, cut grass, etc. The device is formed of conventional rigid bendable material such as steel, aluminum, plastic and other suitable materials, and is provided with a top ring, depending legs and a detachable support ring releasably secured intermediate of the top and bottom of the legs, all of which are so arranged that the device may be folded flat in order that it will take up only a minimum amount of space when not in use.

3,627,243
BAG EXPANDER

Kai Ropche Farrelli, 5450 Russell Ave., Apt. 1, Hollywood, Calif.

Filed Nov. 24, 1969, Ser. No. 879,391
Int. Cl. B65b *67/12*
U.S. Cl. 248—99 **12 Claims**



A plastic belt is expanded inside a paper bag to convert the paper bag to an upright self-supporting disposable waste receptacle, the belt having the equivalent of a buckle means which may be used to suspend the receptacle from a hook on a wall.

3,627,244

BOTTLE HOLDER

Charles P. Nicholas, 5726 Nassau St., Philadelphia, Pa.

Filed Jan. 19, 1970, Ser. No. 4,008
Int. Cl. A47d 15/00
U.S. Cl. 248—103 5 Claims

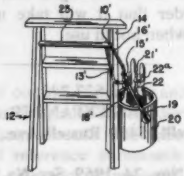
A holder for suspending an infant's bottle from the rail of an enclosure containing an infant to enable unattended feeding of the infant. The holder comprises a collar in which the bottle is clamped, a yoke mounting the collar for restrained pivotal movement on a horizontal axis and an adjustable arm assembly pendulously mounting the yoke on one end. The arm assembly is mounted at its other end into the rail by means of a bracket which permits pivotal movement on a vertical axis so that the bottle and holder may be displaced toward the side of the enclosure when the feeding is finished.

3,627,245

LADDER SUPPORTED BRUSH AND CAN HOLDER

Andrew J. Lewis, 14718 Onaway Road, Shaker Heights, Ohio

Filed Nov. 26, 1969, Ser. No. 880,224
Int. Cl. B44d 3/12
U.S. Cl. 248—113 2 Claims



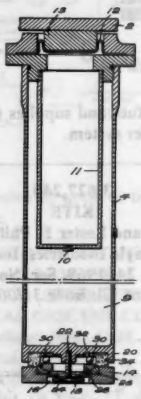
A simple device is disclosed for supporting a paint can on a ladder. An intermediate bend in the wire engages behind a step of the ladder near a side rail while a lower end portion extends beneath the step and out to the front of the side rail where the end thereof embraces the side rail. An upper and portion extends across the upper side of the step to a position slightly laterally outside of the side rail of the ladder and is there provided with an upwardly opening generally vertical reverse bend adapted to receive and hold a paint can bail. A further improvement provides at the end of the reverse bend one or more generally horizontally extending U-shape bends adapted to receive and retain a paint brush handle holding the brush directly above a paint can whose bail is held in the reverse bend. A modification provides that the distal end of the lower end portion is adapted to snap into the reverse bend portion of the upper end portion of the wire so as to lock the device in place.

3,627,246

ISOLATING LEG STRUCTURE FOR TABLES AND THE LIKE

Fred B. Widding, and Arthur Shull, both of Ithaca, N.Y., assignors to Lansing Research Corporation, Ithaca, N.Y.

Filed Sept. 22, 1969, Ser. No. 859,838
Int. Cl. F16m 11/22
U.S. Cl. 248—188.8 4 Claims



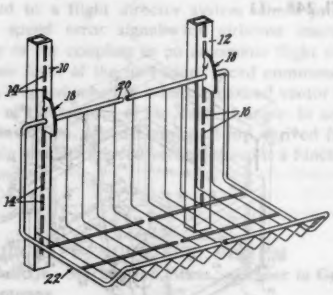
A table is supported on pistons carried by rolling diaphragms at the top of hollow legs. Sensing devices are provided which detect any deviation of the table from a preselected level position and which furnish air under pressure to the legs and permit it to be released therefrom so as to maintain the desired level position. Each leg is mounted at the bottom on thrust bearings having balls mounted between plane parallel surfaces.

3,627,247

BRACKET FOR HOLDING BINS, ETC. TO SLOTTED UPRIGHTS

George Krikorian, 64 Main St., Spencer, Mass.

Filed Feb. 17, 1970, Ser. No. 12,054
Int. Cl. A47g 29/02
U.S. Cl. 248—243 4 Claims



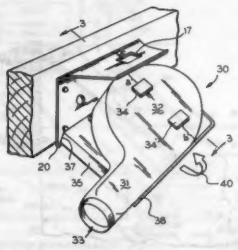
A flat plate, a pair of spaced edge projections thereon in the same plane, said projections being slotted correspondingly for application to a slotted upright, and a rounded notch at the same edge for receiving and holding a rodlike member against the upright.

3,627,248

APPLIANCE SUPPORT MEANS

Gordon S. Nelson, Union, Ill., assignor to Aubrey Manufacturing, Inc., Union, Ill.

Filed Mar. 31, 1970, Ser. No. 24,110
Int. Cl. F24f 5/00
U.S. Cl. 248—309 6 Claims



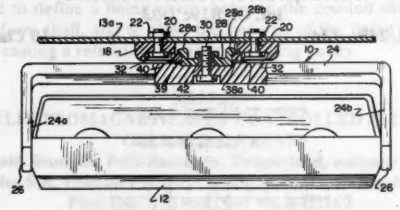
A snap-in appliance support system comprises a metal bracket having an L-shaped cross section. The vertical part of the L-shape is formed from a plate having a plurality of nail holes for mounting the bracket. The horizontal part of the L-shape carries a clip-in latch. At the lower peripheral end of the L-shape, the vertical plate has a C-shaped channel for pivotally supporting an appliance housing which swings up and under the horizontal plate to snap in to the latch.

3,627,249

MOUNTING ASSEMBLY FOR RATIO CONTROL HEAD

Richard D. Lipinski, Arlington Hgts., Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 13, 1970, Ser. No. 11,257
Int. Cl. A47f 5/00
U.S. Cl. 248—223 4 Claims



A mounting assembly for releasably holding a radio control head in an underslung position under the dashboard of a motor vehicle. The mounting assembly is formed of a retainer which is fixedly secured to the dashboard of the motor vehicle. A trunnion bracket fixedly secured to the radio control head and a releasable plug member is connected between the retainer and the bracket to be pulled apart upon impact with the radio control head.

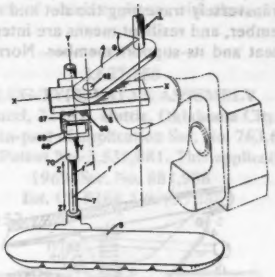
3,627,250

OVERHEAD ISOCENTRIC COUCH FOR THERAPY EQUIPMENT

James Waring Pegrum, Carp, Ontario, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada

Filed June 12, 1970, Ser. No. 45,626
Int. Cl. A61g 13/00
U.S. Cl. 248—324 7 Claims

There is disclosed a patient positioning apparatus, particularly for use with therapy wherein an associated couch is suspended from above rather than forming an integral part of therapy equipment. Also provided is a isocentric facility and the ability to move the patient in rectilinear coordinates and also in $r-$ relationship to a datum which may be the access



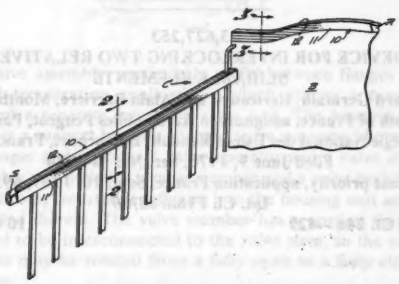
of emission of an X-ray device or a source line of a piece of radio therapy equipment.

3,627,251

TEETHING GUARD EDGING FOR BABY CRIBS, PLAYPENS, AND THE LIKE

Peter J. Paulison, 91 Jacksonville Road, Pequannock Township, N.J.

Filed Sept. 9, 1970, Ser. No. 70,659
Int. Cl. A47b 97/00; A47d 7/00
U.S. Cl. 248—345.1 1 Claim



Teething guard edging strips are described for application along the top and inside wall portions of the guard rails of babypens, playpens and the like, to prevent biting of the paint and wood of such guard rails. Extruded strips of a comparatively soft synthetic plastic material are formed in the cross-sectional shape of an inverted L to completely cover the top and inside surfaces of a painted wood rail. A coextensive web portion extending perpendicularly inwardly from a central portion along the top-covering portion of the strip, and having sawtooth serrated sidewalls, is provided for interfitting securement in a cooperative slot provided centrally along the top of the painted wood rail to which the teething guard edging strip is applied.

3,627,252

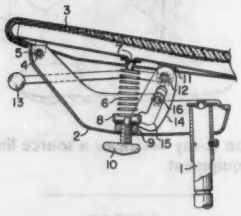
TILTING CHAIR

Yoshiomi Yamaguchi, Tokyo, Japan, assignor to Kabushiki Kaisha Imai Seisakusho, Tokyo, Japan, a part interest

Filed Dec. 22, 1969, Ser. No. 886,822
Int. Cl. A47c 1/026
U.S. Cl. 248—384 7 Claims

An improved chair for combined office and rest use is disclosed which includes a support member carried by a support leg and having its front end portion extended obliquely upward, a chair seat pivotably mounted at its front edge to the front end portion of the support member, a rotary shaft

rotatably mounted on the chair seat transversely thereacross and having an operation handle fixedly secured thereto. A cam is fixedly secured to the rotary shaft and has a hook-shaped slot opening for slidable cooperation relative to a fixed pin transversely traversing the slot and mounted on the support member, and resilient means are interposed between the chair seat and its support member. Normally the pin is



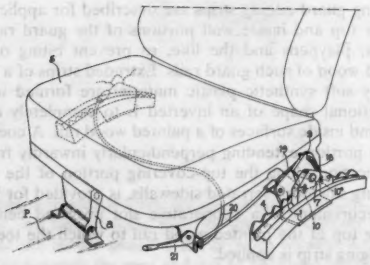
engaged within the hook tip portion of the cam slot opening to lock the chair seat in a substantially horizontal position. A rotational operation of the handle is accompanied with a disengagement of the pin from the hook tip portion of the cam slot, and thereby the chair seat becomes rockable about the pivot at the front end portion of the support member aided by slight shifting of the occupant's weight.

3,627,253

DEVICE FOR INTERLOCKING TWO RELATIVELY SLIDABLE ELEMENTS

Gerard Germain, Hericourt, and Alain Barriere, Montbeliard, both of France, assignors to Automobiles Peugeot, Paris and Regie National des Usines Renault, Billancourt, France

Filed June 9, 1970, Ser. No. 44,784
Claims priority, application France, Sept. 10, 1969, 6930765
Int. Cl. F16m *13/00*
U.S. Cl. 248—429 **10 Claims**



Device interlocking two relatively slidable elements, such as a vehicle seat and a floor.

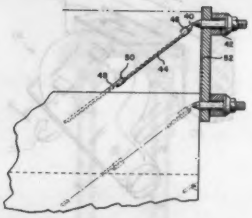
The device comprises a rack integral with one element, a slideway integral with the rack, slide means integral with the other element and movable along the slideway. Two locking rollers carried by the slide means are releasably engageable with the rack. A cam rotatable on the slide means maintains the rollers engaged with the rack in an operative position and allows the rollers to be withdrawn from the rack in an inoperative position. A control device shifts the cam to its inoperative position in opposition to spring means.

3,627,254

CONCRETE FORM TIE ASSEMBLY

Ottis D. Pruitt, Mossyrock, Wash., assignor to Arthur R. Linden and William T. Neelands, Mossyrock, Wash., part interest to each

Filed July 28, 1967, Ser. No. 656,762
Int. Cl. E04g *11/20, 17/06*
U.S. Cl. 249—20 **5 Claims**



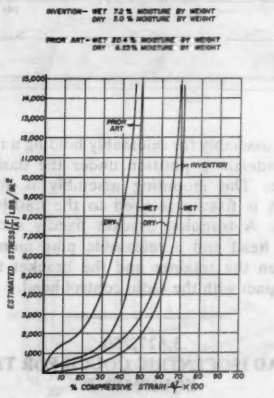
A concrete form wall is braced inwardly (i.e., on the concrete pour side) by a form tie assembly comprising at least two rod members mechanically spliced together. The tie rods are provided at least with serrated end sections that are overlapped and interconnected by a collar member that is drive fitted onto the cooperating overlapped serrated end sections to bind the tie rods together against tensile load forces resulting from the weight of the concrete pour bearing against the form wall.

3,627,255

UNFILLED FLONG

Chester J. Daniels, Rochester, N.Y., and Charles W. Bennett, deceased, late of Penfield, N.Y. (by Lincoln Rochester Trust Company, executor, Rochester, N.Y.), assignors to The Rochester Institute of Technology, Rochester, N.Y., by said Daniels

Filed Sept. 30, 1969, Ser. No. 863,036
Int. Cl. B29c *1/02*
U.S. Cl. 249—134 **10 Claims**



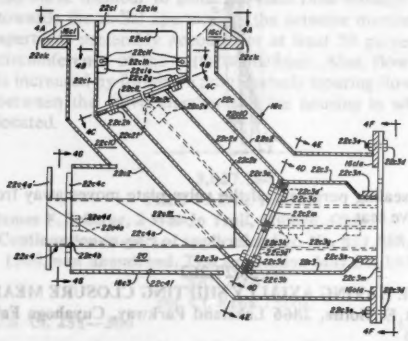
A flong is formed of an unfilled, low-density, compressible base of cellulose fibers having open interstices between the fibers and a clay surface coating on one face. The surface coating meets the requirements for the working surface of a stereotype mat and prevents penetration of the relief printing form or molten stereotype type metal into the base material. The unfilled base is highly compressible and moldable in a drier than usual condition to reduce troublesome shrinkage.

3,627,256

FORM FOR CASTING A LINING IN A CONDUIT

Malvern H. Culp, and August Giovanni, both of Youngstown, Ohio, assignors to United States Steel Corporation

Filed Feb. 24, 1969, Ser. No. 805,979
Int. Cl. B41b *11/60*
U.S. Cl. 249—163 5 Claims



This invention relates to mold forms for, and a method of, casting a lining in a conduit and, more particularly, to an improved mold form for casting refractory linings in the conduit sections of a blast furnace.

The form for casting a lining in a conduit having a predetermined nonlinear conduit shell has a form shell substantially similar in contour to the conduit shell, and a locating member secured to one end of the conduit shell and to the form shell to support the form shell, to align the form shell with the conduit shell to define a lining cavity between the conduit shell and the form shell, and to close the one end of the lining cavity.

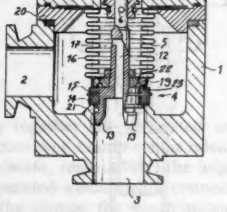
The method of casting a lining in a conduit having a predetermined nonlinear conduit shell includes the steps of securing a form shell to one end of the conduit shell to support the form shell, to align the form shell with the conduit shell to define a lining cavity between the conduit shell and the form shell, and to close the one end of the lining cavity, and casting a refractory lining in the lining cavity.

3,627,257

ELECTROMAGNETICALLY CONTROLLED FLUID-OPERATING VALVE

Harald Stampfli, Petit-Saconnex, Switzerland, assignor to Lucifer S.A. Chemin Lucifer, Carouge-Geneva, Switzerland

Filed Dec. 1, 1969, Ser. No. 881,167
Claims priority, application Switzerland, Dec. 23, 1968, 19127/68
Int. Cl. F16k *31/06*
U.S. Cl. 251—129 1 Claim



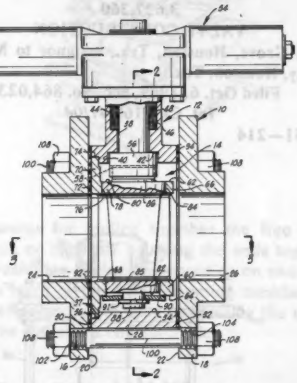
A fluid-operating valve, wherein a magnetically controlled core shifts a flap valve between its operative and inoperative positions. The side of the flap valve facing the channel in which it is seated communicates with the opposite side through ports opening inside a closed bellows-shaped chamber extending coaxially with the flap valve and the average diameter of which registers with that of the seat of the flap valve.

3,627,258

PLUG-TYPE VALVE ASSEMBLY

Domer Scaramucci, 3245 S. Hattie, Oklahoma City, Okla.

Continuation-in-part of application Ser. No. 763,644, Sept. 30, 1968, now Patent No. 3,531,081. This application Dec. 4, 1969, Ser. No. 881,988
Int. Cl. F16k *5/02, 51/00*
U.S. Cl. 251—152 10 Claims



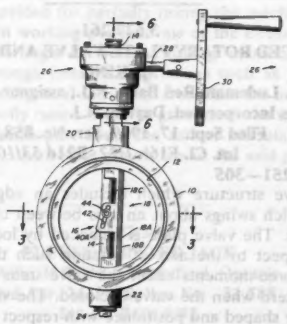
A valve assembly, particularly useful between flanges and in high-temperature applications, which utilizes a housing unit and a separate insertable valve unit. The housing unit provides a support housing adapted to be supported between the flanges and includes a valve operator and a valve stem. The valve unit includes a valve member and a valve body and is sized to be inserted lengthwise into the housing unit and is supported therein. The valve member has a portion thereof adapted to be interconnected to the valve stem, so the valve member may be rotated from a fully open to a fully closed position.

3,627,259

CAM SEAL BUTTERFLY VALVE

George C. Williams, 4123 E. 45th St., Tulsa, Okla.

Filed Dec. 10, 1969, Ser. No. 883,885
Int. Cl. F16k *5/14*
U.S. Cl. 251—163 6 Claims



This invention relates to an improved butterfly valve. More particularly, the invention relates to a butterfly valve having

a body with an axial flow passageway therethrough and a stem opening intersecting the fluid passageway, a stem member rotatably axially displaceably supported in the stem opening, a valve disc positioned in the flow passageway and movable between a closed position in which the plane of the disc is perpendicular to the axis of the flow passageway and an opened position in which the plane of the disc is parallel the axis of the flow passageway, a stem-actuating means external of the body for rotating and axially displacing the stem member, and attachment means securing the stem member to the disc whereby the rotation of the valve stem rotates the disc member between opened and closed positions and the axial displacement of the valve stem moves the disc into and out of sealing engagement with the valve body.

3,627,260

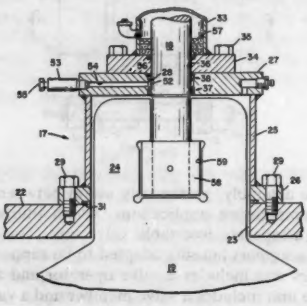
VALVE CONSTRUCTION

Marvin H. Grove, Houston, Tex., assignor to M & J Valve Company, Houston, Tex.

Filed Oct. 6, 1969, Ser. No. 864,023

Int. Cl. F16k *41/04*

U.S. Cl. 251—214 **5 Claims**



A valve having a valve operating rod and sealing means to prevent leakage between the body and the rod. The primary sealing means consists of a plurality of annuluses made of nonmetallic resilient material or materials which are carried in an annular recess and which are dimensioned to form seals on their inner and outer edges. Also there is a secondary seal exterior of the primary seal and means for introducing a plastic material between the two seals. The primary seal is so constructed that it automatically relieves any excess pressure applied to the plastic material.

3,627,261

BALANCED ROTARY PLATE VALVE AND METHOD OF MAKING

Edwin H. Ludeman, Red Bank, N.J., assignor to Andrews Industries Incorporated, Dayton, N.J.

Filed Sept. 17, 1969, Ser. No. 858,791

Int. Cl. F16k *1/22*; **B21d** *53/10*

U.S. Cl. 251—305 **10 Claims**

A valve structure which includes an edge-sealing valve plate which swings about an axis between closed and open positions. The valve plate is balanced by locating the plate with respect to the axis of rotation such that pressure-induced force-moments about the valve stem axis of rotation sum to zero when the valve is closed. The valve-sealing surfaces are shaped and positioned with respect to the axis such that every portion of the sealing periphery of the valve plate moves with a motion component normal to the corresponding sealing surface of the valve seat of the valve body to provide a compressive seal about the entire sealing periphery upon the application of closing torque. Upon opening, the

entire sealing periphery of the valve plate moves away from the valve seat.

3,627,262

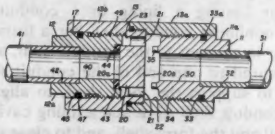
VALVE HAVING AXIALLY SHIFTING CLOSURE MEANS

Dwight E. Hottle, 2866 Lakeland Parkway, Cuyahoga Falls, Ohio

Filed Jan. 22, 1970, Ser. No. 4,939

Int. Cl. F16k *31/44*

U.S. Cl. 251—346 **6 Claims**



An in-line type of valve made up of first and second connector elements that are telescoped within opposed ends of a generally cylindrical housing unit that, in turn, has a central baffle, with the connector elements having a fixed relationship with each other during relative rotational movement of the housing so that the internal baffle having axial fluid orifices can be shifted into and out of sealing relationship with one of said connector elements.

3,627,263

AEROSOL VALVES

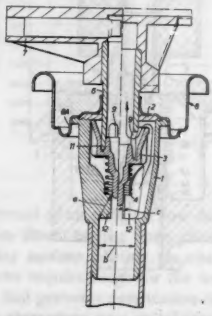
William Edward Warren, Cuffley, and Frederick James Gallagher, Hayes, both of England, assignors to Bespak Industries Limited

Filed Dec. 15, 1969, Ser. No. 884,785

Claims priority, application Great Britain, Dec. 18, 1968, 60,109/68

Int. Cl. F16k *31/58*, *31/524*

U.S. Cl. 251—353 **5 Claims**



The invention relates to improvements in a known form of aerosol valve having a cup-shaped valve member whose an-

nular, upper edge normally seals against a main seal under spring pressure. The interior of the cup communicates, through radial apertures in the wall of a hollow actuator member, with the interior of the member. The valve is opened by pressing the actuator member downwardly to unseat the valve member.

One improvement resides in shaping the interior surface of the valve member to guide the fluid flow radially inwardly towards the radial apertures in the actuator member. These apertures preferably account for at least 50 percent of the circumference of the actuator member. Also, flow velocity is increased by forming a progressively tapering flow passage between the valve member and the housing in which it is located.

3,627,264

TIRE VALVE INSERT

James F. Scherer, 2 Wal-Jo Trail, Milford, Ohio

Continuation-in-part of application Ser. No. 821,858, May 5, 1969, now abandoned. This application May 26, 1970, Ser. No. 40,691

Int. Cl. F16k *15/20*

U.S. Cl. 251—366 **13 Claims**

A tire valve insert manufactured from a cylindrical metal tube by axially compressing the tube to form a peripheral flange, radially expanding the tube, forming internal tapers, and threading various internal as well as external sections of said tube.

3,627,265

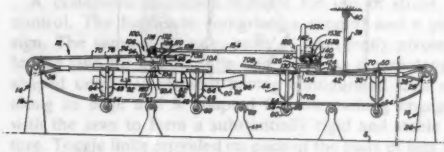
CONVEYOR BELT SPLICING APPARATUS

Elmer Payne, P.O. Box 93, Chapmanville, W. Va., and Ray Blevins, P.O. Box 99, Danville, W. Va.

Filed June 9, 1970, Ser. No. 44,807

Int. Cl. F16g *11/12*

U.S. Cl. 254—53 **10 Claims**



In splicing together the separated ends of a normally endless belt conveyor, clamp means releasably connected on the belt proximate, respectively, the adjacent ends thereof, and power-operated winch means connected on and extending between the clamps, the winch means being operable to draw one end of the belt towards the other to bring the same into juxtaposition and to thereby facilitate their connection, one with the other.

3,627,266

APPARATUS FOR PULLING TOGETHER FREE ENDS OF AN ENDLESS TRACK OR BAND

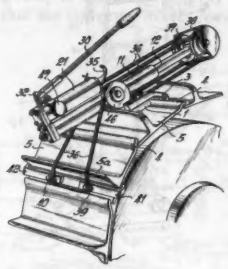
Willy Braun, Friedrich-Ebert-Strasse 47, Heiligenrode, Germany

Filed July 3, 1969, Ser. No. 839,018

Claims priority, application Germany, July 3, 1968, P 17 03 729.5

Int. Cl. F16g *11/12*

U.S. Cl. 254—53 **15 Claims**



An apparatus for pulling together the free ends of an endless track or band for coupling the ends together, comprising a tensioning device for mounting on one free end of the endless track, a flexible connecting member extending from the device and a coupling connecting the member and the other free end of the endless track.

3,627,267

ARTICULATED PUBLIC WORKS MACHINE OR VEHICLE

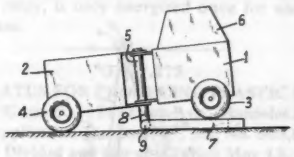
Yves Kemper, Pontchateau, France, assignor to Etablissements J. Sambron, Pontchateau, France

Filed Mar. 13, 1970, Ser. No. 19,163

Claims priority, application France, Mar. 25, 1969, 6908747

Int. Cl. B60s *9/02*

U.S. Cl. 254—86 R **13 Claims**



A device for partially raising a public works machine or the like comprising two articulated chassis elements wherein means are provided for partially raising the machine in such manner that in working position one of the elements rest on the ground through its normal rolling members such as wheels or through immobilizing means such as props, and through the said partial raising means, while the other chassis element is wholly raised from the ground nd can turn relative to the first chassis part about the axis of articulation of the chassis and relative to the ground about the said partial raising means.

3,627,268

FLUID-OPERATED JACK

Mac Gordon Wills, R.R. #2, Chelmsford, Ontario, Canada

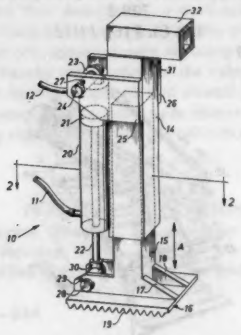
Filed Apr. 24, 1970, Ser. No. 31,588

Int. Cl. B60s *9/02*

U.S. Cl. 254—86 H **11 Claims**

A fluid-operated jack particularly suited for use as an outrigger on a rock-drilling vehicle includes first and second

telescopic guide members. The second guide member has a ground-engaging plate terminally and rigidly secured thereto and a hydraulic ram has a cylinder pivotally connected to the first guide member and a piston rod terminally and pivotally connected to the ground-engaging plate so that the piston



rod is disposed essentially parallel to a common axis of the first and second guide members. The guide members usefully have noncircular cross-sectional configurations so that the torsional and transverse stresses applied to the piston rod are significantly reduced so permitting the use of lighter weight cylinders and pistons for a given application.

3,627,269

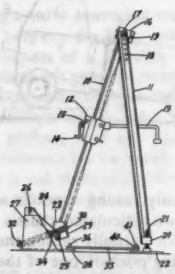
VEHICLE BUMPER JACK AND CONVERSION KIT

Oscar W. Olson, 3613 37th Ave. N.E., Minneapolis, Minn.

Continuation-in-part of application Ser. No. 834,962, June 20, 1969. This application July 20, 1970, Ser. No. 56,505

Int. Cl. B66f 3/08

U.S. Cl. 254—99 **10 Claims**



A stable multilegged vehicle bumper jack utilizing a removable single-post ratchet or screwjack. The conventional standard equipment single-post automobile jack is convertible to a safer more stable multilegged jack by incorporation into an auxiliary supporting frame which per se comprises a conversion kit. The jack is characterized by a fixed base movably supporting the jack column to permit variations of the angle of the jack column to compensate for differences due to lifting of the vehicle bumper, so as to avoid compensating movement of the supporting legs which are rigidly secured together.

3,627,270

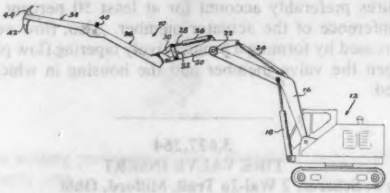
WRECKING BAR FOR USE WITH A BACKHOE

Donald C. Schreiber, and George R. Schreiber, Jr., both of Eden, N.Y., assignors to Schreiber and Winkelman, Inc., Eden, N.Y.

Filed July 30, 1970, Ser. No. 59,535

Int. Cl. B66f 3/00

U.S. Cl. 254—124 **5 Claims**



A wrecking bar attachable to the free end of the dipstick of a backhoe after the conventional earthmoving bucket has been removed therefrom. The bar is of dogleg-shaped configuration having attaching and wrecking end portions of metal box beam construction.

The wrecking end portion of the bar carries a dependent wrecking blade and an upstanding hook, whereas the attaching end portion is fitted to permit pivotal attachment to the dipstick of a backhoe.

3,627,271

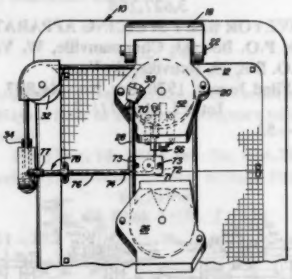
LIMIT CLUTCH CONTROL FOR DOZER BLADE CABLE LIFT

Woodrow Regenbrecht, Sealy, Tex., assignor to Maurice A. Lehmann, Houston, Tex., a part interest

Filed Dec. 22, 1969, Ser. No. 887,074

Int. Cl. B66d 1/48

U.S. Cl. 254—173 **2 Claims**



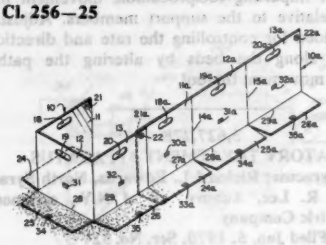
An automatic power release for the cable drum clutch of a bulldozer blade cable lift assembly consisting of a reciprocal actuator supported from the stationary block of the cable lift assembly and an abutment carried by the travelling block of the cable lift assembly. One end of a pull cable is attached to the actuator and trained to the rear of the associated bulldozer and attached to a plunger-actuating mechanism including a plunger actuated thereby and operatively associated with the cable drum clutch of the cable lift assembly. The abutment, when the travelling block approaches the upper block, is engageable with the actuator to shift the latter and movement of the actuator is transmitted through the cable attached thereto for inwardly displacing the associated plunger and releasing the cable drum clutch.

3,627,272

PROTECTIVE ENCLOSURE UNIT

Samuel Friedberg, Chelsea Tower, Atlantic City, N.J.

Filed July 17, 1970, Ser. No. 55,668
Int. Cl. E04h *17/16*
U.S. Cl. 256—25 3 Claims



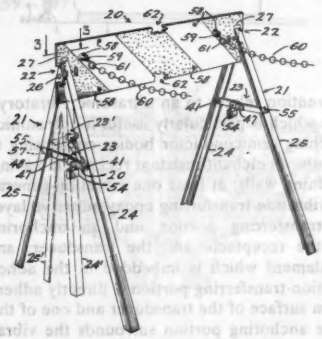
A series of substantially congruent generally rectangular panels hingedly connected together in end-to-end relation, and flaps on aligned sides of at least the endmost panels, the panels and flaps being swingable between a collapsed condition in facing relation with each other, and an erected condition with the panels in angular relation with respect to each other and upstanding from said aligned sides and flaps.

3,627,273

BARRICADE

Robert D. Birner, Toledo, Ohio, assignor to The Toledo Pressed Steel Company, Toledo, Ohio

Filed Feb. 26, 1970, Ser. No. 14,515
Int. Cl. E04h *17/14*
U.S. Cl. 256—64 8 Claims



A collapsible barricade suitable for use in street traffic control. The barricade comprises a support and a plate or sign. The support includes pairs of divergently pivoted legs having jaws for gripping the sign. The sign is a rectangularly shaped uniplanar element having configurated slots spaced along its edge and is adapted for interlocking engagement with the jaws to form a substantially rigid and stable structure. Toggle links provided on each of the pairs of legs have a latching mechanism by which the legs may be retained in an expanded position to prevent removal of the sign from the jaws.

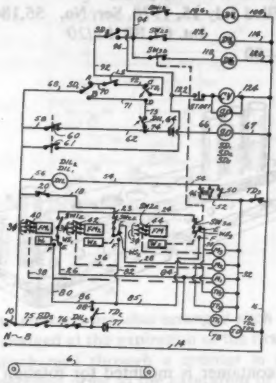
3,627,274

CAM STOP IMPROVEMENT

Dan S. Wise, and James L. Sosebee, both of Gastonia, N.C., assignors to Fiber Controls Corporation, Gastonia, N.C.

Filed July 30, 1969, Ser. No. 846,130
Int. Cl. B01f *3/00*
U.S. Cl. 259—1 11 Claims

An improvement in a fiber-blending system of the type whereby a plurality of weighing pans are disposed above a conveyor belt and are fed with fiber material, which is dumped onto the conveyor periodically after all of the pans have weighed a chosen amount. The conveyor onto which the fibers are dumped is normally caused to move forward after each dump for a given distance so that fiber sandwiches are formed on the conveyor to be delivered to other equipment. Normally connected in parallel with a relay energizing the conveyor for forward movement is a spraying relay which, when energized, causes a tint, dye or the like to be sprayed onto the fibers as they move with the conveyor so that the spraying relay is energized to spray a different sandwich each time that the conveyor moves forward. In the prior



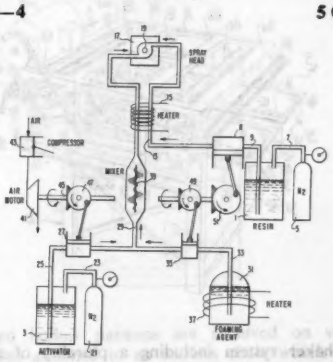
art circuit for controlling the operation of the equipment as described herein, the conveyor is normally energized briefly after the fibers in the pan are dumped to ensure that a switch, which is closed to stop the conveyor, is open, and then deenergized briefly before being once more energized to move forward the rest of the given distance. This double energization of the conveyor relay, and hence the spray relay, causes the fiber sandwiches to be sprayed twice for each dump rather than once as desired. The improvement of this invention, as disclosed below, overcomes this problem by providing a circuitry so that the conveyor relay, and hence the sprayer relay, is only energized once for each dump of the weigh pans.

3,627,275

APPARATUS FOR PRODUCING PLASTIC FOAM

Frederick E. Gusmer, 1121 Ocean Ave., Mantoloking, N.J.

Original application Jan. 9, 1967, Ser. No. 608,050, now abandoned. Divided and this application May 13, 1970, Ser. No. 37,055
Int. Cl. B01f *15/04*
U.S. Cl. 259—4 5 Claims



A low-boiling foaming agent such as dichlorodifluoromethane is added to one of the reactive

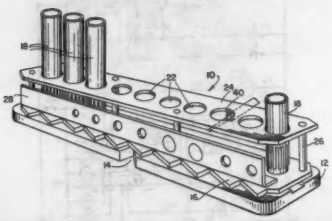
liquids of a system for forming a foam such as polyurethane foam, by pumping the reactive components and the foaming agent to elevated pressure in three separate pumps that are mechanically linked so as to maintain a fixed delivery ratio to each other, then mixing the foaming agent with one of the liquids, and finally mixing that latter mixture with the other reactive liquid and ejecting a single stream of material that foams on a substrate and then cures.

3,627,276

SAMPLE CONTAINER AND MIXING APPARATUS

Saul R. Gilford, Oberlin, Ohio, assignor to Gilford Instrument Laboratories Inc., Oberlin, Ohio

Filed July 15, 1970, Ser. No. 55,180
Int. Cl. B01f *9/20*
U.S. Cl. 259—50 **9 Claims**



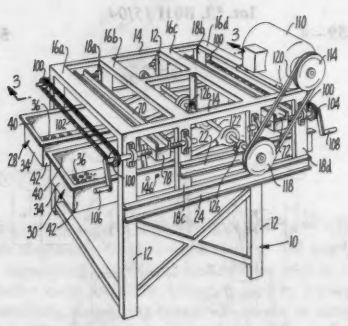
A sample container is mounted for rotation in a rack of carrier with a plurality of other containers. The rack has bearings for providing bearing engagement with the containers. Each container has a corrugated outer surface and internal paddles. After reagents have been added to the contents of the containers, a jet of air is directed against the corrugations which act as turbine blades. The containers each rotate in turn as it reaches the station where the nozzle for the jet of air is located, whereby the contents of the containers are thoroughly mixed prior to testing the same. The containers may each be integrally molded or the corrugations may be applied to a conventional container by means of a flexible collar having the corrugations molded therein.

3,627,277

SHAKER BED SYSTEM

Joseph A. Amori, 1270 Pine Ave., San Jose, Calif.

Filed Apr. 17, 1970, Ser. No. 29,429
Int. Cl. B01f *13/00*
U.S. Cl. 259—59 **6 Claims**



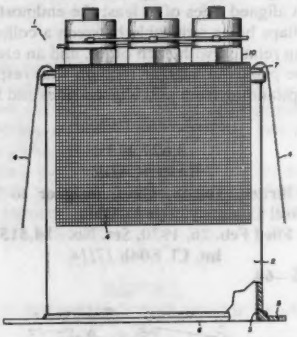
A shaker system including a plurality of shaker beds disposed in side-by-side relation and having head ends and tail ends. A plurality of first support links are pivotally connected to the head ends and extend upwardly therefrom. A plurality of second support links are pivotally connected to the tail ends and extend upwardly from the tail ends. The upwardly extending ends of said first and second support links are pivotally connected to support members and drive means is provided for imparting reciprocatable movement to the shaker beds relative to the support members. Adjustment means is provided for controlling the rate and direction of material flow along the beds by altering the paths of reciprocatable movement thereof.

3,627,278

VIBRATORY TREATMENT APPARATUS

Paul L. Dee, Syracuse; Richard L. Edwards, North Syracuse, and Harold R. Lee, Auburn, all of N.Y., assignors to General Electric Company

Filed Jan. 5, 1970, Ser. No. 527
Int. Cl. B01f *11/02*
U.S. Cl. 259—72 **8 Claims**



This invention relates to an ultrasonic vibratory treatment apparatus which is particularly useful in ultrasonically cleaning or etching semiconductor bodies comprising the following elements: an etchant-resistant receptacle having a plurality of retaining walls; at least one vibration-generating transducer; a vibration-transferring epoxy-adhesive layer having a vibration-transferring portion and an anchoring portion between the receptacle and the transducer; and a heat-transfer element which is imbedded in the adhesive layer. The vibration-transferring portion is directly adhered to both the bottom surface of the transducer and one of the retaining walls. The anchoring portion surrounds the vibration-transferring portion and part of the transducer thereby securing the transducer to one of the walls of the receptacle. The receptacle, the transducer, the epoxy-adhesive layer and the heat-transfer element are all correlated to produce a standing-wave system in a liquid having a known cavitation threshold in the receptacle responsive to a particular power input to the transducer.

3,627,279

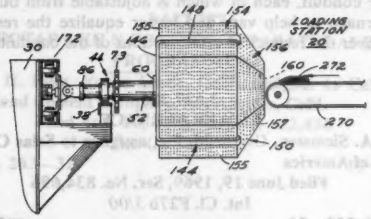
BARREL-TYPE PROCESSING APPARATUS

James Barton, Grosse Pointe Woods, and Patrick H. Norton, Birmingham, both of Mich., assignors to Ionic International Inc., Warren, Mich.

Original application July 27, 1966, Ser. No. 568,287, now Patent No. 3,521,650, dated July 28, 1970. Divided and this application Jan. 21, 1969, Ser. No. 821,532
Int. Cl. B01f *9/02*
U.S. Cl. 259—90 **3 Claims**

A workpiece holder receptacle has a sidewall in the form of a polygonal-shaped body, a generally flat rear end bottom wall and a top wall in the form of a generally frusto-polygonal-shaped front end cover. The top wall has edge portions which surround a generally centrally located relatively

large opening, and the receptacle is perforated throughout the greater portion thereof to permit treating solutions to escape. The polygonal side and top walls impart additional tumbling motion to the workpieces upon rotation of the



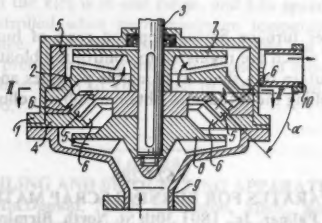
receptacle. The receptacle is mounted in a support bracket which has a base through which the receptacle axis extends. The base is provided with a plurality of elongated arms which engage the walls of the receptacle.

3,627,280

APPARATUS FOR MIXING AND DISPERSING LIQUIDS AND LIQUIDS WITH SOLIDS

Viktor Mironovich Fridman, Karetny Ryad, 5/10, kv. 180; Stanislav Konstantinovich Ushanov, 2 Khutorskaya Ulitsa, 18/20, korpus 5, kv. 70, and Galina Alexandrovna Sapogova, Leningradsky prospekt, 57, kv. 110, all of Moscow, U.S.S.R.

Filed Jan. 14, 1970, Ser. No. 2,873
Int. Cl. B01f *7/16*
U.S. Cl. 259—107 **2 Claims**



An apparatus for mixing and dispersing liquids and liquids with solids comprises a rotor with teeth on its periphery and a stator with at least two rows of teeth, the rotor teeth being arranged between the stator teeth and at least one face of the rotor tooth and the corresponding gap-forming face of the stator tooth being set at an oblique angle to the rotation plane of the rotor.

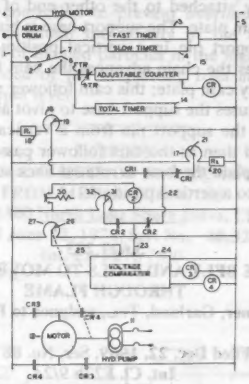
3,627,281

MIXING TIMER

Norman L. Peterson, Wauwatosa, Wis., assignor to Rex Chainbelt, Inc., Milwaukee, Wis.

Filed Mar. 12, 1970, Ser. No. 18,844
Int. Cl. B28c *5/20*
U.S. Cl. 259—177 **5 Claims**

A control for a transmit-mix truck is arranged to indicate for each revolution of the mixer drum, whether the drum speed is below a predetermined minimum or above a predetermined maximum speed, to count those resolutions occuring at speeds between the predetermined speeds, and to initiate a change from mixing to a slower agitating speed when a predetermined number of counted revolutions are recorded. In a preferred structure a pair of slow drop out timing relays and a control relay are briefly energized at least once each revolution of the mixer drum. Contacts on the relays are arranged such that a first capacitor is charged immediately following the brief energization of the relays and is discharged through an indicating light if the next relay energization occurs before the expiration of a first-timing interval. The relay contacts are also arranged such that a second capacitor is charged at the expiration of the first-timing interval and is discharged through a counter in the event the relays are energized prior to the expiration of a second-timing interval or is discharged through a second-indicating light in the event that second-timing interval expires before the next energization.



ERRATUM

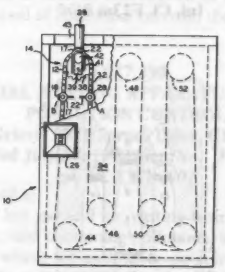
For Class 263—52 see:
Patent No. 3,627,857

3,627,282

PATH ARRANGEMENT FOR PARISON HEATING

William G. Kinslow, Jr., Kansas City, Mo., assignor to Phillips Petroleum Company

Continuation-in-part of application Ser. No. 696,329, Jan. 8, 1968, now Patent No. 3,477,700. This application Nov. 10, 1969, Ser. No. 875,081
Int. Cl. F27b *9/24*
U.S. Cl. 263—8 **10 Claims**



Preformed hollow parisons are received on vertically disposed pins attached to an endless chain which conveys these parisons through a heating oven and out at a point spaced away from the side walls of said oven. After the parisons have traveled though the oven and been heated to

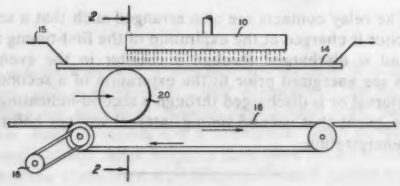
the desired temperature, the pins are rotated 90° so as to transfer the parisons to a horizontal position. These horizontally disposed parisons are then ready to be received by a molding station. A preferred apparatus for accomplishing the transfer of the parisons from a vertical to a horizontal position comprises a support base to which the support pins are fixedly attached, this base being hinged at one end to a flange extending upwardly from a link plate on the chain; a cam follower fixedly attached to the other end of this base; and a stationary cam plate. The support base is biased so as to support the support pin in a vertical position by a spring or spring clip; as the chain advances the cam follower contacts the stationary cam plate; this cam follower riding against the cam plate causes the support base to pivot about the hinge so as to rotate the support pin from a vertical to a horizontal position, and then as the cam follower passes the high point on the cam plate the base is rotated back so as to return the support pin to a vertical position.

3,627,283

DRIVE BELT AND RAILS TO MOVE ARTICLE THROUGH FLAME

Neal A. Hittner, Garland, Tex., assignor to Phillips Petroleum Company

Filed Dec. 22, 1969, Ser. No. 887,284
Int. Cl. F27b *9/24*
U.S. Cl. 263—8 **5 Claims**



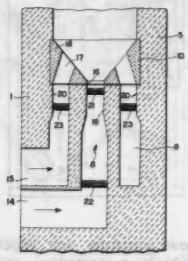
A flame-treating apparatus for generally cylindrical articles such as bottles comprises a belt means spaced apart from a pair of rails. The article is rolled between the belt and the rails to thus pass same through a flame so as to effect a surface treatment of the article.

3,627,284

HEAT REGENERATOR, PARTICULARLY HOT BLAST STOVES FOR A BLAST FURNACE

Jacobus Van Laar, Santpoort, and Johannes H. W. Ouwerkerk, Ijmuiden, both of Netherlands, assignors to Didier-Werke A. G., Wiesbaden, Germany

Filed Oct. 17, 1969, Ser. No. 867,301
Claims priority, application Germany, Oct. 19, 1968, P 18 03 985.5
Int. Cl. F23m *9/00*
U.S. Cl. 263—19 **6 Claims**



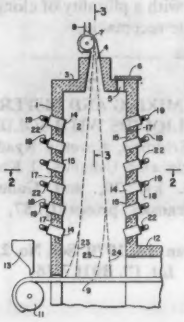
A hot blast stove or heat generator for blast furnaces with structure for improving the mixture and combustion of the gas and air fuel components within the combustion chamber, wherein the improved structure includes coaxially disposed but nonintercommunicating center and annularly encircling conduits for supplying respectively the gaseous fuel and air components with a pressure and flow equalizing rod lattice in one or both of the respective conduits. A preferred form utilizes two axially spaced lattices in the gas conduit and one in the air conduit, each of which is adjustable from outside of the furnace to help vary and better equalize the respective flows over the respective cross sections of the conduits.

3,627,285

TOWER FURNACE

Ernst A. Siemssen, Gwynedd, Pa., assignor to Selas Corporation of America

Filed June 19, 1969, Ser. No. 834,696
Int. Cl. F27b *3/00*
U.S. Cl. 263—21 **6 Claims**



A tower furnace having opposed rows of burners in its sidewalls which are regulated to control the bloating and the falling pattern of a sheet of bloatable particles and a method of controlling the furnace to obtain a slab of cellular ceramic material.

3,627,286

APPARATUS FOR BURNING SCRAP MATERIAL

James T. Palmer, Jr., 1801 30th St. North, Birmingham, Ala.

Filed Oct. 8, 1970, Ser. No. 79,215
Int. Cl. F27b *9/00*; **F23g** *7/00*
U.S. Cl. 263—28 **5 Claims**

Apparatus designed primarily for burning used automobiles in the scrapping process. It includes an elongated burning tunnel having one tangent of a track for material carrying cars passing therethrough, the track having a second tangent and the tangents being connected by semicircular end sections. The track is higher at the exit end of the tunnel than at the entrance end and the cars run by gravity down the

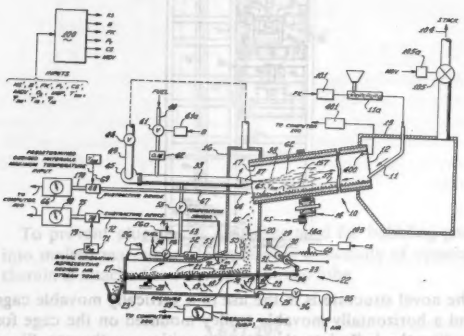
second tangent for reloading. Means is provided to propel the cars from the exit end of the tunnel to the higher end of the second tangent and from the curved section at the entrance of the tunnel to a position for loading adjacent the entrance of the tunnel.

3,627,287

ROTARY KILN CONTROL APPARATUS AND PROGRAMMING

Joseph H. Herz, Yorba Linda, Calif., assignor to California Portland Cement Company, Los Angeles, Calif.

Filed Aug. 10, 1970, Ser. No. 62,424
Int. Cl. F27b *7/20*
U.S. Cl. 263—32 **19 Claims**



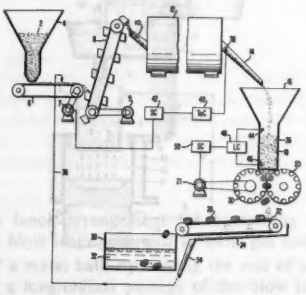
Rotary kiln operation is controlled so as to result in satisfactory kiln performance and high quality clinker production over long periods of time. Main burner fuel supply is controlled when the maximum temperature of materials in the kiln is in one range, and kiln speed of rotation is controlled when such maximum temperature is in another range. Also, air is passed to the kiln via a clinker cooler, for preheating, and the cooler speed of movement is controlled in relation to kiln speed of rotation and raw mix feeder speed.

3,627,288

DEOILING AND BRIQUETTING APPARATUS

Ward D. MacDonald, North Muskegon, Mich., assignor to Michigan Foundry Supply Apparatus, Muskegon, Mich.

Original application Jan. 7, 1969, Ser. No. 798,571, now abandoned , which is a division of application Ser. No. 714,364, Mar. 19, 1968, now Patent No. 3,450,529. Divided and this application Feb. 24, 1970, Ser. No. 13,337
Int. Cl. F27b *7/00*
U.S. Cl. 263—32 **7 Claims**



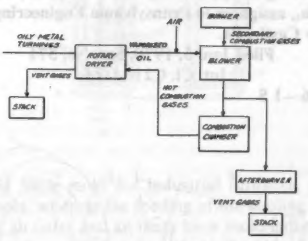
This disclosure relates to an apparatus for making metal briquettes for foundry operations from oily particulate material. The briquettes are made, for example, from oily metal particles, such as metal turnings, which are fed to a furnace to burn the oil therefrom. In the furnace, the particles are heated to a high temperature of, for example, 1,200° to 1,400° F. The heated and deoiled particles are passed directly to a hopper which feeds the briquetting mechanism. The temperature of the deoiled particles is sensed and is maintained within a predetermined range for briquetting by adjusting the feed to the furnace in accordance with the sensed temperature. The amount of deoiled particles in the feed hopper is controlled to prevent overflow of the feed hopper and to maintain the density of the briquettes by sensing the level of deoiled particles in the feed hopper and adjusting the speed of the briquetting rolls accordingly to maintain the proper level.

3,627,289

APPARATUS AND METHOD FOR REMOVING OIL FROM METAL TURNINGS

Walter Erman, 1300 North Lake Shore Drive, Chicago, Ill.

Filed June 22, 1970, Ser. No. 48,324
Int. Cl. F27b *7/00*
U.S. Cl. 263—33 R **12 Claims**



An apparatus and method are provided for use in removing oil from metal turnings. The apparatus includes a rotatable dryer equipped with an internal baffle arrangement used to suspend oily turnings in a stream of hot combustion gases which vaporize oil contained on the turnings, and a combustion chamber which generates hot combustion gases from a mixture of air and vaporized oil removed from the turnings and recirculates a portion of the combustion gases to the dryer. In addition, the apparatus is provided with a natural gas burner which generates secondary combustion gases for the combustion chamber when insufficient heat is generated by the combustion of the air-vaporized oil mixture alone, a blower which circulates air vaporized oil and secondary combustion gases to the combustion chamber and a control assembly to balance the flow of the air-vaporized oil mixture and secondary combustion gases.

The method for removing oil from oily turnings generally involves the use of heat of combustion of the removed oil to effect the removal of additional oil from the turnings.

3,627,290

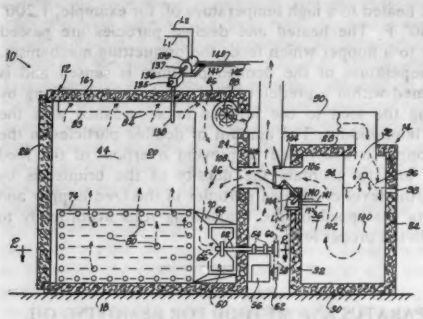
INDUSTRIAL HEATING APPARATUS WITH AIR-POLLUTION CONTROL

George Price Grieve, 2020 Spruce Drive, Glenview, Ill.

Filed July 23, 1970, Ser. No. 57,460
Int. Cl. F27b *3/02*
U.S. Cl. 263—40 R **12 Claims**

A stream of hot gas and air, exiting from a drying, baking, or curing oven, and containing pollutants, is diverted through an incinerator where the pollutants are converted to harmless water and carbon dioxide vapors. Some of the hot, purified gas effluent from the incinerator is then directed back to the oven, via an arrangement of dampers, at a rate of flow sufficient to maintain the oven at a predetermined temperature. The dampers exhaust excess hot gas to atmosphere and draw in an equivalent volume of fresh, makeup air. Temperature in the oven is maintained by controlled power means which au-

tomatically moves the dampers to vary the proportion of



cool, makeup air and hot incinerator effluent entering the oven.

3,627,291

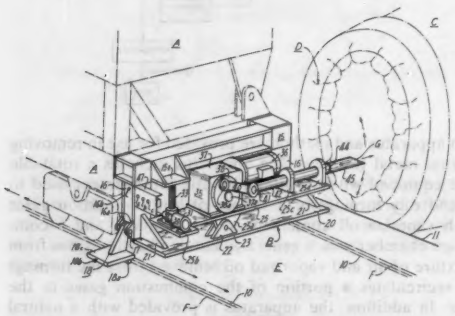
DESKULLING METHOD AND DEVICE

Harry T. Montgomery, and Howard M. Fisher, both of New Castle, Pa., assignors to Pennsylvania Engineering Corporation, New Castle, Pa.

Filed Jan. 5, 1970, Ser. No. 571

Int. Cl. C21c *5/28*

U.S. Cl. 266—1 S **10 Claims**



A ram device is adapted for attachment to a conventional moving carriage, such as of a scrap charger, has a frame for securing it in a projecting relation therefrom, and has an impact tool head projecting therefrom and adapted to thrust against, break, peel or pull-away solidified material, such as skull, from a mouth or other portion of a vessel, such as a BOF furnace. The tool is motor driven to reciprocate on a platform structure of the frame and is adapted for movement on or about the mouth area from which adhering skull or solidified material such as slag is removed. Thrust-absorbing means is carried by the frame to take up end thrust generated by the operation of the tool to enable its direct absorption independently of and in such a manner to minimize thrust force exerted on the carriage.

3,627,292

APPARATUS FOR HOISTING AND POSITIONING LADLES

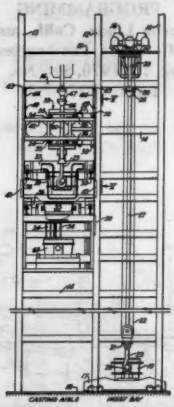
Francis Gallucci, North Huntingdon Township, Westmoreland County, and Joseph E. Urso, Shaler Township, Allegheny County, both of Pa., assignors to United States Steel Corporation

Filed Apr. 6, 1970, Ser. No. 25,807

Int. Cl. C21c *7/00*

U.S. Cl. 266—13 **11 Claims**

An apparatus for hoisting and positioning ladles of molten metal particularly for use in a continuous casting installation. The associated apparatus includes a crane which lifts a ladle of molten metal to the necessary height, transports the ladle horizontally and lowers it to a ladle car, after which the crane hooks are disengaged from the ladle and moved clear. The car then carries the ladle to a position over an intermediate vessel (for example a tundish), from which the metal can be teemed into a continuous-casting mold in the usual fashion.



The novel structure is in the use of a vertically movable cage and a horizontally movable trolley mounted on the cage for guiding the ladle into the proper position on the car. Since the cage can move vertically, the ladle can be placed on cars at different heights, thus making it possible to use the same ladle-handling apparatus with receiving vessels of different vertical dimensions.

3,627,293

APPARATUS FOR PURIFYING METALS BY POURING THROUGH SLAG

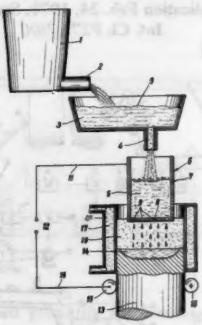
Franz Sperner, Hanau/Mair, Germany, assignor to Leybold-Heraeus Verwaltung GmbH, Cologne-Beyental, Germany

Filed Jan. 30, 1970, Ser. No. 7,121

Claims priority, application Germany, Mar. 14, 1969, P 19 12 935.2

Int. Cl. C21c *7/00*

U.S. Cl. 266—34 R **8 Claims**



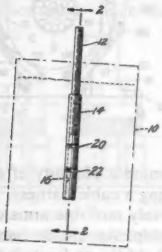
Apparatus for the continuous purifying or refining and casting of metals, notably copper, by pouring a metal fused outside the slag layer through the slag layer.

3,627,294

PROTECTION SLEEVE FOR DIP TUBES

Clarence D. Hill, Aldan, Pa., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Mar. 25, 1970, Ser. No. 22,588
Int. Cl. C21c 7/00
U.S. Cl. 266—34 T 11 Claims



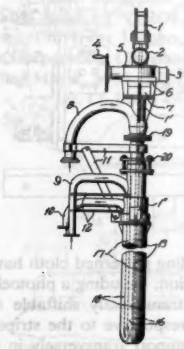
To prevent plugging of dip tubes used for bubbling gases into molten material a sleeve having a plurality of openings therein is attached to the end of the dip tube.

3,627,295

BLOW LANCE ARRANGEMENT

Jyo Doi, Kanagawa-ken, and Kunio Yoshioka, Kanagawa-ken, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Original application July 26, 1967, Ser. No. 656,241, now abandoned. Divided and this application Apr. 29, 1970, Ser. No. 32,997
Int. Cl. C21c 7/00
U.S. Cl. 266—34 L 6 Claims



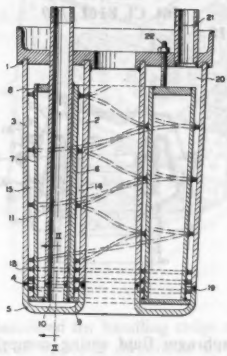
A blow lance arrangement for controlling flow of gas through a blow lance arranged to blow gas onto the upper surface of a metal bath by moving the end of a spindle arranged in a longitudinal passage of the blow lance from a retracted position located upwardly spaced from a restricted throat portion of the passage through the throat portion to advanced positions into the outwardly flaring nozzle portion of the passage.

3,627,296

COOLED BLOW MOLD FOR INDUSTRIAL FURNACES PARTICULARLY BLAST FURNACES

Johannes Uerlichs, Wolfelsbach/Eifel; Rudolf Muller, Merzenich, and Wilhelm Kuckertz, Konzendorf, all of Germany, assignors to Hermann Rappold & Co., Duren-Birkesdorf, Germany

Filed Mar. 10, 1970, Ser. No. 18,066
Claims priority, application Germany, Mar. 10, 1970, P 19 11 938.1
Int. Cl. C21b 7/16
U.S. Cl. 266—41 9 Claims



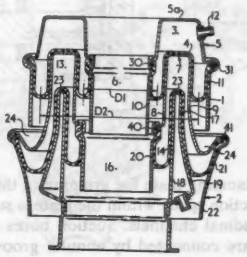
A cooled blow mold for industrial furnaces, particularly blast furnaces, wherein the feeding of the cooling agent is led in between an outer and an inner blow mold jacket which enclose the cooling chamber directly to the blow head. A ring chamber is located at the blow head and the cooling agent is led from there through the cooling chamber to the outflow of the cooling agent connected to the blow mold foot. A concentrical displacement body is set in the cooling chamber which receives the feeding line. The displacement body divides the cooling chamber into an outer, an inner and through a radial ring wall into an annular chamber of the blow head. Overflow openings are provided for the cooling agent in the ring wall in the cross-sectional area of the outer and the inner annular chamber, through which the cooling agent is led along both annular chambers to the outflow of the cooling agent.

3,627,297

FLUID SPRINGS

Jan Gaydecki, Leicester, England, assignor to The Dunlop Company Limited, London, England

Filed Feb. 11, 1970, Ser. No. 10,569
Int. Cl. F16f 5/00
U.S. Cl. 267—118 6 Claims



A spring assembly comprising a series arrangement of two rolling diaphragm fluid springs, each spring being of the kind

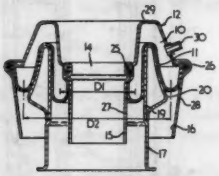
in which a piston operates in a cylinder against a flexible diaphragm, the diaphragm and cylinder together enclosing a fluidtight space. The springs are arranged so that the cylinder of one spring constitutes the piston of the other spring, of which the following is a specification.

3,627,298

FLUID SPRINGS

Jan Gaydecki, Leicester, England, assignor to The Dunlop Company Limited, London, England

Filed Feb. 11, 1970, Ser. No. 10,568
Claims priority, application Great Britain, Jan. 18, 1969, 8662/69
Int. Cl. F16f *5/00*
U.S. Cl. 267—118 **5 Claims**



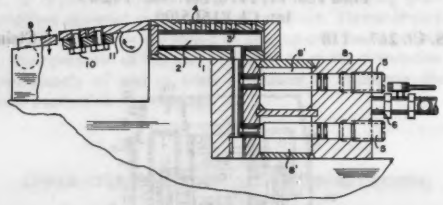
A rolling diaphragm fluid spring comprising an annular cylinder in which an annular piston is arranged to operate against a flexible diaphragm, the diaphragm and cylinder together enclosing an annular fluidtight space so as to form a spring with an axial extending central throughway. The opposing walls of the cylinder and piston may be cylindrical to give a diaphragm effective area not dependent on the stroke of the piston or alternatively the opposing walls may diverge to give a stroke-variable diaphragm effective area, of which the following is a specification.

3,627,299

SUCTION CLAMPING PLATE FOR THE GRIPPING OF THIN-WALLED WORKPIECES

Karl Schwarze, and Udo Schmiedeskamp, both of Oeynhausen, Germany, assignors to Firma B. Schmiedeskamp K.G., Bad Oyenhausen, Germany

Filed Dec. 19, 1969, Ser. No. 886,625
Claims priority, application Germany, Dec. 23, 1968, P 18 16 639.7
Int. Cl. B25b *11/00*
U.S. Cl. 269—21 **4 Claims**



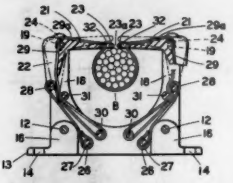
A suction clamping plate for gripping of thin-walled workpieces. The suction space within the plate is subdivided into a pair of longitudinal channels. Suction bores extending from the channels are connected by annular grooves arranged to interengage on the bearing face of the plate. Dual screw valves are provided between the channels and suction lines for forming a vacuum in either one or both suction channels.

3,627,300

WIRE CABLE HARNESS ASSEMBLY APPARATUS

Jack E. Caveney, Chicago; Raymond F. Roberson, Tinley Park, and Joseph S. Rohaly, Alsip, all of Ill., assignors to Panduit, Tinley Park, Ill.

Filed Mar. 19, 1970, Ser. No. 20,926
Int. Cl. B65b *27/10, 67/00;* **F16l** *3/22*
U.S. Cl. 269—131 **20 Claims**



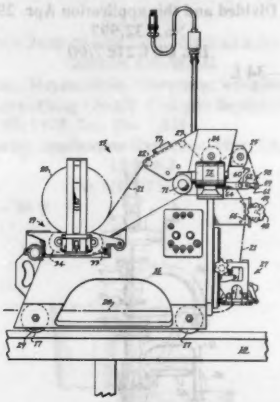
A holder for forming a plurality of strands of wire into a bundle for assembling a cable harness. The holder includes a frame having relatively movable arms of which the ends are in spaced relationship. An elastic band is fastened on the frame to yieldably hold the ends spaced and provide a cradle for the wires.

3,627,301

APPARATUS FOR ALIGNING A WEB OF PATTERNED SHEET MATERIAL

Robert W. Benson, and Robert G. Reed, both of Nashville, Tenn., assignors to Cutters Machine Company, Inc., Nashville, Tenn.

Filed May 4, 1970, Ser. No. 34,425
Int. Cl. B65h *29/46*
U.S. Cl. 270—31 **23 Claims**



A machine for spreading patterned cloth having a longitudinal line or linear division, including a photoelectric line- or stripe-sensing head, a transversely shiftable cloth support, and an electric motor responsive to the stripe-sensing head for moving the cloth support transversely in a direction to maintain a line in said cloth on a true longitudinal course.

3,627,302

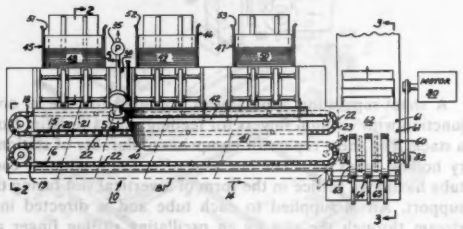
APPARATUS FOR PROCESSING FOLDED ARTICLES

Lyle V. Dutro, 1060 Carriage House Road, Pasadena, Calif.

Filed July 19, 1968, Ser. No. 746,151
Int. Cl. B65h *5/30*
U.S. Cl. 270—55 **13 Claims**

This invention relates to apparatus for handling folded paper sections, such as newspaper sections, which apparatus

includes a transport device, an opening device, and a delivery device which are adapted for expeditious stuffing of sections, and the delivery of the stuffed articles. The transport mechanism comprises a supporting table adapted to receive newspaper sections from a supply station or stations, there being a slot extending through and along the said table in the direction of forward motion of the newspapers. A peg is carried by and driven by a continuous chain so as to pass along the slot and transport the newspaper in one direction of its travel and then return to its starting location via a path not in said slot, to repeat its action. Means for opening and holding open the section comprises a rotating sucker wheel adjacent to the supporting surface along which the section is moved,



and adjacent to it there is an overhanging shelf adapted to support a free edge of the section so that additional sections can be inserted.

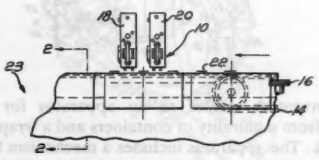
The delivery mechanism comprises a delivery wheel having a peripheral surface, a portion of which is an arcuate, resilient and yieldable contact section having a first radius, and the other portion of which is a relieved section of lesser projection in order that the delivery wheel may turn continuously to admit a section beneath it while the relieved section faces the supporting surface and to contact the section with the arcuate contact section in order to move the newspaper section off the table when it has reached a limit of forward motion. The yieldable resilience enables the mechanism to accommodate sections of varying thickness without interim adjustment.

3,627,303

MACHINE CONTROL CIRCUIT

Abraham Zeewy, University Heights, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed May 7, 1969, Ser. No. 822,490
Int. Cl. B65h *43/02*
U.S. Cl. 270—56 **18 Claims**



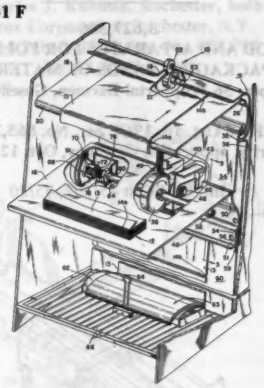
Signature-handling machine in which thickness of signature book is sensed by a detector wheel. Detector wheel operates switch whose output is integrated to provide signal for indicating a book of incorrect or correct thickness. Incorrect thickness signal operates with delay to prevent stitching and to effect a rejection of the signature book. Delay for rejection is introduced by a shift register which is shifted by a clock pulse derived from a switch through circuitry which prevents false clock pulses.

3,627,304

APPARATUS FOR HANDLING CONTINUOUS STRIPS OF MATERIAL

Terrence L. Reeder, and Albert C. Wiegert, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 22, 1969, Ser. No. 843,487
Int. Cl. B65h *45/101*
U.S. Cl. 270—61 F **7 Claims**



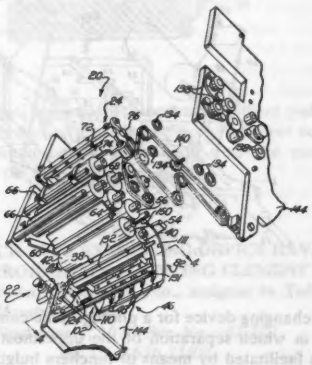
Apparatus is described for handling strips of material that have been folded in opposite directions so as to be easily stacked, e.g. computer readout. The apparatus for handling may be used illustratively with such photographic apparatus as a microfilmer and in particular, to aid the restacking of the folded continuous document after it has been photographed. In particular, the apparatus for handling, stretches the folds of the continuous document over a hump or raised portion and further directs the continuous document along a confined path which is abruptly offset to thereby provide a curvature in a continuous document and to eliminate wrinkles in the folds.

3,627,305

COLLATOR FOLDER REGISTER ASSEMBLY

Carl H. Heigl, Westlake, and Keith S. Macey, Rocky River, both of Ohio, assignors to Harris-Intertype Corporation, Cleveland, Ohio

Continuation-in-part of application Ser. No. 738,031, June 18, 1968, now Patent No. 3,554,531. This application June 17, 1969, Ser. No. 834,122
Int. Cl. B65h *45/14*
U.S. Cl. 270—68 A **17 Claims**



An improved folder assembly for folding a gather or plurality of sheets along a predetermined fold line includes a

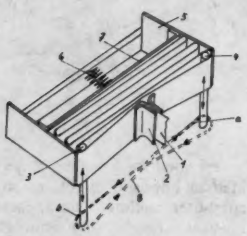
plurality of inclined feed and folder rollers. Front and side registers position the gather in a predetermined relationship with the folder rollers while the gather is supported on an inclined surface. The gather is then folded along the predetermined fold line by the folder rollers. A trimmer assembly having a single movable knife is operable to trim the folded gather to its final size in a single trimming operation.

3,627,306

METHOD AND APPARATUS FOR FOLDING AND PACKAGING BANDS OF MATERIAL

Hans Affupper, 56 Wuppertal-Barmen, Gosenburg, 100, Germany

Filed Oct. 10, 1969, Ser. No. 865,256
Claims priority, application Germany, Oct. 12, 1968, P 18 02 889.2
Int. Cl. B65h *45/107, 45/20*
U.S. Cl. 270—79 **5 Claims**



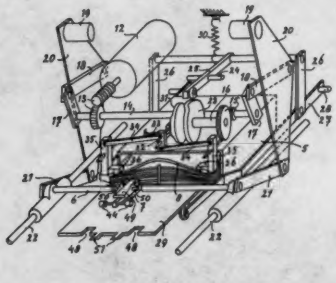
A method and apparatus for the zigzag folding and packaging of continuous bands of materials such as textiles wherein a feed nozzle is moved between at least two spaced-apart and generally parallel winding pins along several types of paths while the pins are selectively retracted along their axes to permit the band of material, which is dispensed from a feed nozzle to span across the pins.

3,627,307

FILM-CHANGING DEVICE

Lucas van der Does, Delft, Netherlands, assignor to N. V. Optische Industrie de Oude Delft, Delft, Netherlands

Filed Feb. 26, 1970, Ser. No. 14,309
Int. Cl. B65h *5/10*
U.S. Cl. 271—3 **3 Claims**



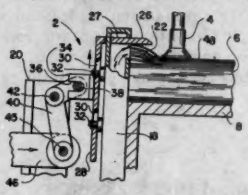
Film-changing device for a photographic camera using film sheets, in which separation of the uppermost sheet from a stack is facilitated by means of pinchers bulging up the forward edge of the sheet. To remove the sheet the bulged edge is clamped by a clip member mounted on a reciprocatable carriage and so pulled out of the supply magazine.

3,627,308

SHEET SEPARATOR

Hans O. Stoever, Rush, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 25, 1970, Ser. No. 40,028
Int. Cl. B65h *3/48*
U.S. Cl. 271—26 **10 Claims**



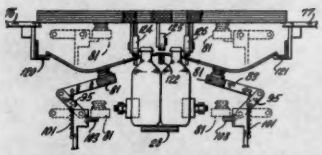
A sheet-separating apparatus is provided for use in conjunction with vacuum fingers for feeding sheets seriatim from a stack. The sheet separator comprises a plurality of stationary hollow tubes adjacent one end of a sheet support, each tube having an orifice in the form of a vertical slot facing the support. Air is supplied to each tube and is directed in a stream through the slot by an oscillating riffling finger associated with each tube and having a tab extending into the slot to vary the effective area thereof. When the riffling finger is in a lowered position against the top of the stack, air is forced through a small area of the slot at a high velocity to separate the edges of the upper sheets as a vacuum finger engages the uppermost sheet. As the riffling fingers move upwardly from the stack the effective area of each slot becomes larger, causing a gradual decrease in the velocity of the air and a gradual increase in volume. After the vacuum fingers have separated the uppermost sheet from the stack the riffling finger moves downwardly to grip the remaining sheets on the stack.

3,627,309

PACKAGE-FORMING MACHINE

Robert H. Ganz, Bergenfield, N.J., assignor to Continental Can Company, Inc., New York, N.Y.

Original application Sept. 27, 1967, Ser. No. 670,882.
Divided and this application Aug. 1, 1969, Ser. No. 862,567
Int. Cl. B65h *3/08, 5/16*
U.S. Cl. 271—32 **17 Claims**



This invention relates to an apparatus for forming a package from a plurality of containers and a wraparound carrier blank. The apparatus includes a mechanism for transferring a blank from a hopper to a mechanism which applies the same to a group of bottles. The mechanism includes means for at least partially separating a lowermost blank from immediately adjacent blanks and a pair of articulately mounted gripping heads which prevent slippage between each gripped blank and the heads, as well as means for bowing each blank during the removal thereof. Articles about which the blanks are wrapped are bottom supported by individual grouped supporting elements while being conveyed by pusher lugs. Means are provided for conveying different numbers of articles and/or different sizes thereof and means are provided for

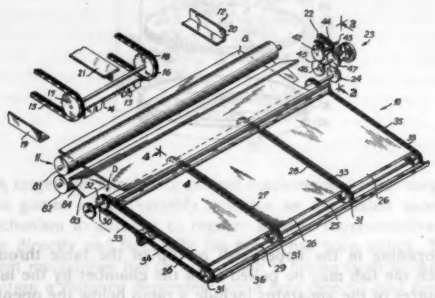
adjusting the relative position of each pusher lug and associated supporting elements depending upon the particular number and/or size of containers being conveyed. The pusher lugs are articulately carried by endless members to components for accurately sized articles and prevent breakage or damage thereto during the conveying operation.

3,627,310

FEED APPARATUS FOR CORRUGATED BOX BLANKS

William F. Pulda, Edison, N.J., assignor to Universal Corrugated Box Machinery Corporation, Cranford, N.J.

Filed Feb. 6, 1970, Ser. No. 9,285
Int. Cl. B65h *5/16*
U.S. Cl. 271—45 **9 Claims**



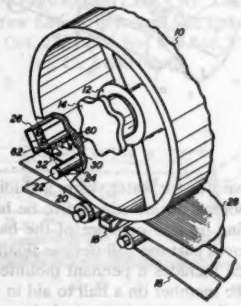
Apparatus for feeding in synchronous fashion box blanks to a box blank processing apparatus, to assure that the blanks are supplied in positive timed relation notwithstanding distortion of the box blanks. The apparatus includes speed change means to prevent interference between projections on the feeding apparatus and the trailing edges of the box blanks during transfer of the blanks to the processing apparatus.

3,627,311

SHEET SENSOR

Thomas S. Spinelli, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Sept. 8, 1969, Ser. No. 855,914
Int. Cl. B65h *7/06*
U.S. Cl. 271—56 **5 Claims**



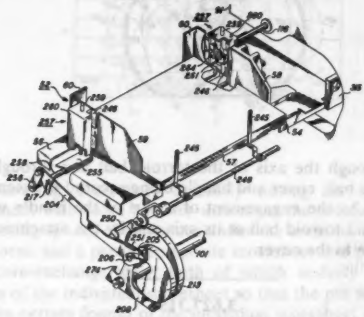
Apparatus which inactivates a xerographic machine in response to a copy sheet miss-puff. A sheet of paper remaining on the xerographic drum beyond the stripping station will move beneath a pneumatic sensor head. A second pneumatic sensor head adjacent the edge of the drum at an area beneath which misfed sheets will not pass is pneumatically coupled with the first sensor so that a change of pressure between the two sensors, as caused by a miss-puffed sheet, will cause the tripping of a fluidic switch to energize a control relay and stop the machine.

3,627,312

RESTACKING APPARATUS

George E. Fackler, Louisville, Ky.; Merton R. Spear, Jr., Penfield, and Charles J. Kubasta, Rochester, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed July 3, 1969, Ser. No. 838,791
Int. Cl. B65h *31/38*
U.S. Cl. 271—89 **3 Claims**



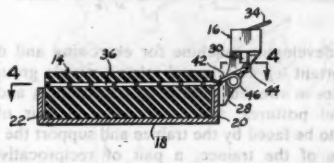
Apparatus for use in an automatic copying device is herein disclosed for storing cut sheets of final support material between processing stations. A supply tray is positioned intermediate the processing stations and is arranged to receive and store cut sheets in stack configuration. Jogging members are positioned to act upon the front margin and the side margin of the individual sheets forwarded into the tray wherein the sheets are placed in registration prior to their being forwarded to the next subsequent station.

3,627,313

PORTABLE JOGGING RECORDER

Lewis M. Schonfeld, 343 East 5th, New York, N.Y.

Filed Feb. 3, 1970, Ser. No. 8,210
Int. Cl. A63b *23/04*
U.S. Cl. 272—57 **1 Claim**



A base frame horizontally supports a resilient pad in turn supporting the feet of the user. A fulcrumed lever actuates a counter mounted on the base each time the padding is depressed by the feet of the user.

3,627,314

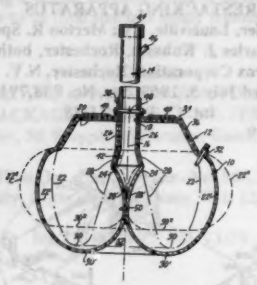
POGO STICK TYPE EXERCISING DEVICE HAVING A TORROID SHAPE BOUNCING ELEMENT

Donald F. Brown, Crestwood, Mo., assignor to Tuff Industries, Inc., Hazelwood, Mo.

Filed June 1, 1970, Ser. No. 42,222
Int. Cl. A63b *25/08*
U.S. Cl. 272—57 E **5 Claims**

A pogo stick type exercising device characterized by a resilient, inflatable ball in the shape of a torroid defining the

bouncing element of the device, a rigid foot-stand cover for the ball and a pogo stick handle therefor, structured and combined to produce a jumping or bouncing toy and exercising device having enhanced play value and an attractive and effective structure and assembly. The pogo stick handle extends through the axis of the torroid ball and through the cover, the ball, cover and handle being secured in assembled condition by the engagement of a part of the handle with a part of said torroid ball at its axis and by the attachment of the handle to the cover.



3,627,315

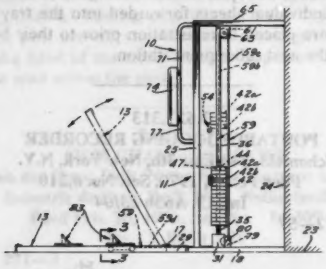
LEG DEVELOPING DEVICE

Walter Marcyan, 441 West Kenneth Road, Glendale, Calif.

Continuation of application Ser. No. 530,506, Feb. 28, 1966, now abandoned. This application Nov. 26, 1968, Ser. No. 779,283

Int. Cl. A63b *21/06*

U.S. Cl. 272—81 **10 Claims**



A leg-developing machine for exercising and developing the important leg muscle and related muscle groups utilized by athletes in stressful contact sports, running and sprinting in natural postures, which comprises a pair of uprights adapted to be faced by the trainee and support the hands and shoulders of the trainee; a pair of reciprocative slidable skates, each to support a foot of the trainee; a pair of tracks each to guide one of the skates in substantial alignment with said uprights and adjustable resistance weights connected through to a pulley system each of the skates to present the desired resistance to the movement of the skates horizontally outwardly from the uprights.

3,627,316

MAGNETIC FISHING GAME APPARATUS

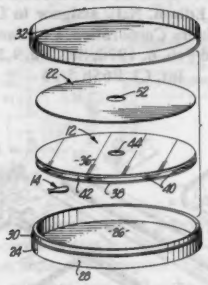
Edward Machinski, 3715 N. Milbury Ave., Baldwin Park, Calif.

Filed Feb. 6, 1969, Ser. No. 797,113

Int. Cl. A63f *9/14*

U.S. Cl. 273—1 M **2 Claims**

Magnetic fishing game apparatus having a hollow game table simulating a fishing facility such as a pond and providing an internal chamber for containing one or more magnetic elements simulating fish, and a fishing implement having a magnetic element simulating a lure attached to one end of a line. The object of the game is to simulate catching a fish by initially maneuvering the lure to a position wherein a fish within the table chamber becomes magnetically attached to the lure and then drawing the lure and attached fish toward an opening in the upper wall or top of the table through which the fish may be pulled from the chamber by the lure. Features of the apparatus include a ramp below the opening for guiding the fish into the opening, a removable shield which permits the game to be played with the fish visible or hidden, a novel baffle arrangement which provides both a maze within and supports the upper plate of the game table, and a novel container for the table.



3,627,317

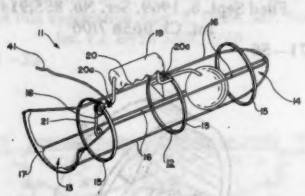
GAME APPARATUS FOR WATER SKIERS

David H. Whitsitt, 1963 Pamela Drive, Memphis, Tenn.

Filed Mar. 13, 1969, Ser. No. 806,937

Int. Cl. A63b *69/18*

U.S. Cl. 273—1 R **8 Claims**



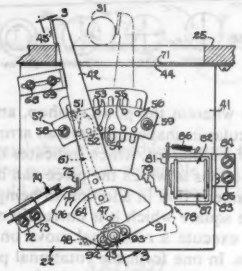
A game apparatus for water skiers including a ball device, and a ball-scooping device adapted to be held by the water skier for picking up one or more of the ball devices as the water skier moves past the ball devices floating on the water. The ball device includes a pennant mounted by means of a flexible wirelike member on a ball to aid in visual sighting of the ball. The ball-scooping device includes an elongated open framework body portion formed of wirelike members, with one end of the body portion being closed against passage of the ball devices, yet open for passage of water, and the opposite end being open for the reception of the ball devices in the water. A scoop is provided adjacent the end of the open end of the body portion and a fingerlike member is pivotally mounted adjacent the open end of the body member for retaining the ball devices in the body portion. The scoop and a handle are mounted on opposite sides of the body portion.

3,627,318

FORCE DETECTING TARGET FOR PINBALL MACHINES AND THE LIKE

Roman F. Garbary, and Edward P. Krynski, both of Chicago, Ill., assignors to D. Gottlieb & Company, Chicago, Ill.

Filed Jan. 22, 1969, Ser. No. 792,920
Int. Cl. A63b *71/00*
U.S. Cl. 273—121 A 12 Claims



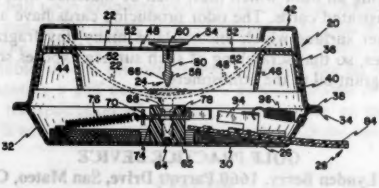
A target mechanism for pinball machines and other target-type games which variably actuates an associated scoring mechanism to cause it to register a score representative of how directly and forcefully the target has been struck. The target mechanism has an arm which is driven from its initial position a distance dependent upon how directly and forcefully the target has been struck, and a pulse generating means for converting the distance the target arm is driven to a corresponding number of pulses which are supplied to actuate the scoring mechanism. The pulse generating means comprises a master switch which is operated to provide a predetermined number of pulses each scoring cycle and a plurality of auxiliary switches which are operated sequentially and in synchronism with the master switch such that the operation of each auxiliary switch tends to inhibit a respective one of the master switch pulses. The movement of the target arm at least a predetermined minimum distance from its initial position causes a bypass circuit to be completed around a number of such auxiliary switches corresponding to the extent of the movement so that the appropriate number of pulses are transmitted to the scoring mechanism.

3,627,319

BATTING TRAINER APPARATUS AND METHOD

Norman J. Van Skyhawk, Salt Lake City, Utah, assignor to Harmon Killebrew Enterprises, Inc., Salt Lake City, Utah

Filed Oct. 23, 1969, Ser. No. 868,776
Int. Cl. A63b *69/40*
U.S. Cl. 273—26 R 19 Claims



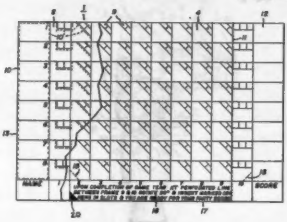
A cup for holding a ball is equipped on its underside with a necked plunger that extends downwardly and may engage a latch remotely operable by a treadle and fastened to the base of an annular housing. Planar spring means between the cup and the housing catapults the ball into the air when the plunger is released.

3,627,320

SCORESHEET FOR RECORDING INDIVIDUAL AND COMPOSITE SCORES

Edmund L. Dopieralski, 26 Angelus Drive, Rochester, N.Y.

Filed Dec. 15, 1969, Ser. No. 884,982
Int. Cl. A63d *5/00*;B41l *1/22*
U.S. Cl. 273—54 C 8 Claims



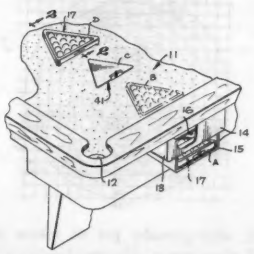
A bowling scoresheet assembly having an individual scoresheet with score transfer means on the reverse side of the scoring spaces of all frames under the areas for receiving pin scores, and a partial composite scoresheet and a detachable score-exchange sheet both of which underly different frames of the individual scoresheet so that the pin scores entered in certain frames of the individual scoresheet are automatically transferred to the pin score boxes of the score-exchange sheet as the scores are entered while those entered in the remaining frames are transferred to composite scoresheet. The score-exchange sheet upon being detached from the composite scoresheet being rotatable through 90° to a new position in which it serves as an additional portion of the composite scoresheet to thereby effect a score-exchange operation.

3,627,321

POOL BALL RACK

Philip A. Sardo, 17338 Hartland, Van Nuys, Calif.

Filed Apr. 1, 1970, Ser. No. 24,716
Int. Cl. A63d *15/00*
U.S. Cl. 273—22 6 Claims

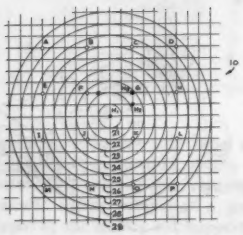


A ball rack for pool or pocket billiards having a removable bottom member adapted to fit into recesses formed in the inner faces along the lower edges of two sides of the rack. An inwardly extending support member on the underside of the toe of the rack and an inwardly projecting flange on the rear edge of the bottom member, the latter slidably engaging a recess in the outer face of the third side of the rack, support the bottom member in the recesses for movement of the rack from the ball return compartment to the surface of the game table. The lower edge of the third side of the rack is cut away to allow the rack and balls to be slid into the ball-spotting position on the table while the bottom member remains in place, its motion restrained by frictional means provided on its lower surface.

3,627,322
PROTECTIVE HELMET FOR TABLE SOCCER GAME FIGURES
Xaver Leonhart, 8381 Harburg near Landau, Isar, Germany
Filed Dec. 31, 1969, Ser. No. 889,528
Claims priority, application Germany, Jan. 20, 1969, G 69 01 966.5
Int. Cl. A63h *13/00*
U.S. Cl. 273—85 D 5 Claims

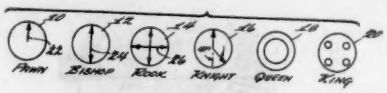
A protective helmet for the head portion of table soccer game player figures, which is firmly resiliently attached to the head of the game figure by loose pivotal connections about the ear portions thereof such that the helmet has natural and free mobile movement relative to the player figure as the figure is pivoted back and forth during play to make the figure appear more active and animated.

3,627,323
HIT DETECTION SHOCK SYSTEM
Daniel J. Bozich, and Charles E. Deckard, both of Huntsville, Ala., assignors to Wyle Laboratories, El Segundo, Calif.
Filed Sept. 25, 1969, Ser. No. 860,933
Int. Cl. F41j *5/00*
U.S. Cl. 273—102.2 S 8 Claims



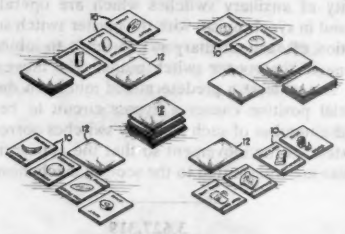
A hit detection system comprising energy-sensitive detectors arranged in an array over a target area of interest. Each detector is connected to a separate amplifier whose output is connected to the input stage of a separate shift register through a threshold circuit. The shift registers are clocked simultaneously by clock pulses from a synchronized clock, the clock pulse period being a function of the time required for energy to traverse a distance which equals the dimension of a hit location area of interest. For each hit location area of interest an AND gate is included. The inputs of each gate are connected to selected stages of the shift register so that only when an impact occurs in the hit location area, associated with the gate, does the latter provide a hit-indicating output.

3,627,324
CHESS GAME
James B. Krepp, 2970 Barclay Square, North Columbus, Ohio
Filed Feb. 5, 1970, Ser. No. 8,976
Int. Cl. A63f *3/02*
U.S. Cl. 273—131 B 3 Claims



A chess game wherein the pawn, bishop, and rook pieces are typically circular in shape and have an arrowlike designation on the top face thereof, which indicates the permissible direction or directions in which the piece can be moved. One feature of the game is that in addition to being able to move a piece from the square which it is currently occupying, it is also possible to execute a rotational move only with one of the above pieces. In one form the rotational pieces have octagonal projections engaging octagonal recesses on the board. In a simpler form, the weight of the piece holds it in its rotated position.

3,627,325
COMPRISING ARTICLE ILLUSTRATING CARDS AND RELATED ODOR-PRODUCING CARDS
Jeffrey D. Breslow, Evanston, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.
Filed Sept. 9, 1970, Ser. No. 70,790
Int. Cl. A63f *1/00*
U.S. Cl. 273—152.1 5 Claims

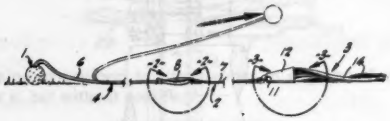


A card game including two decks of cards, wherein a card from one deck is to be matched with a card from the other deck. The cards of one deck are illustrated with various articles having different characteristic odors, and the cards of the remaining deck have no identification but are capable of producing an odor which must then be matched with one of the illustrated cards. The odor producing cards have a cellular outer surface which encapsulates many tiny fragrant oil particles, so that scratching of such surface exposes some of the fragrant oil to the atmosphere.

3,627,326
GOLF PRACTICE DEVICE
Elmer Lynden Berry, 1660 Parrott Drive, San Mateo, Calif.
Filed Oct. 2, 1969, Ser. No. 863,116
Int. Cl. A63b *69/36*
U.S. Cl. 273—183 C 4 Claims

A plurality of streamers are secured to a golf ball for restricting the free flight thereof. The streamers may be of different colors and are connected to the ball by a single length of cord having one of its ends secured to a pair of parallel cords which also may be of different colors. The other end of the single cord is secured to the ball. The

streamers are secured to the pair of parallel cords. If a hook or slice influence is imparted to the ball, the pair of parallel cords will twist upon each other. The single cord is formed of



a heavier material than that used in forming the pair of parallel cords. During ground roll, the single cord absorbs twisting forces that would otherwise be imparted to the pair of parallel cords.

3,627,327

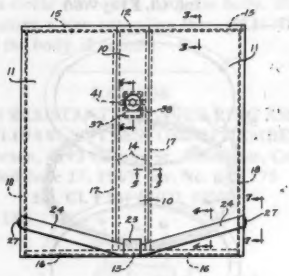
GOLFING TARGET INCLUDING FREELY HANGING SHEETS AND BALL-COLLECTING RECEPTACLE

Carl W. White, 1017 Locust St., Kansas City, Mo.

Filed June 26, 1970, Ser. No. 50,133

Int. Cl. A63b *69/36, 63/00, 63/04*

U.S. Cl. 273—185 R **6 Claims**



A game played with a golf ball for practice to increase the accuracy in direction of the player in hitting the ball, comprising a vertical target which may be made of polyvinyl chloride closed-cell sponge sheet material that is shock absorbent and from which there will be no rebound of the ball, the ball falling dead downwardly along the surface of the target upon striking the target. A detachable return runway for the ball, made of the same material to prevent any bouncing of the ball upon dropping into the runway, is provided at the lower end of the target, inclined toward a receptacle for the ball. The target may be defined by three freely hanging detachable sheets, the center one of which has an opening representing a golf cup, and has a foldable frame to permit ready transportation of the target from place to place. A signal is actuated when the ball passes through the opening.

3,627,328

GOLF PRACTICE DEVICE INCLUDING STANCE COORDINATOR

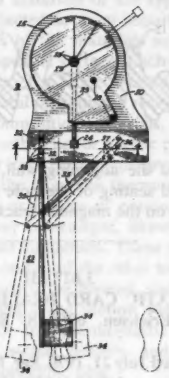
Rudy R. Becker, 1660 W. Bell Road, Phoenix, Ariz., and Jacob Schriner, 2076 E. Charleston, Phoenix, Ariz.

Filed Mar. 24, 1970, Ser. No. 22,247

Int. Cl. A63b *69/36*

U.S. Cl. 273—197 R **5 Claims**

A device to permit the practice of golf strokes both indoors and outdoors by striking a spring-loaded object representing the golf ball and including an adjustable arm including a footpad at its free end for controlling the stance of



the golfer and holding the device in place on club impact. An indicia diagram is provided on the device to indicate to the golfer a yardage assimilation of his stroke.

3,627,329

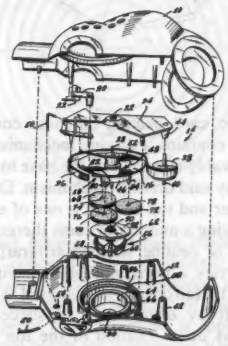
TURNTABLE GOVERNOR DRIVE SYSTEM

William A. Jacobs, Manhattan Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 5, 1968, Ser. No. 781,491

Int. Cl. G11b *25/04*

U.S. Cl. 274—9 R **12 Claims**



A mechanism useful in toy phonographs for driving a governor from the record turntable comprising three planetary discs of elastomeric material rotatably mounted on the turntable at different positions around its axis. The rims of the discs are engaged with a large stationary raceway, and with the small hub of a governor, to drive the governor at a high speed.

3,627,330

PREGROOVED MAGNETIC TRACKS

Panayotis C. Dimitracopoulos, 3435 Drummond St. Suite 26, Montreal, Quebec, Canada

Filed Oct. 30, 1969, Ser. No. 872,643

Int. Cl. G11b *3/72*

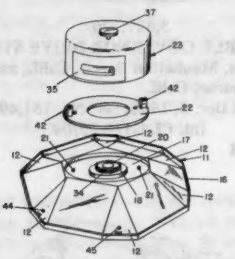
U.S. Cl. 274—41.4 **5 Claims**

A form of grooved track for pregrooved magnetic records, said records having spaced-apart raised walls defining

between them the surface area of the magnetic track, and there being a recessed groove, or "gutter," between an edge

of the track and the adjoining wall, this arrangement permitting improved seating of the pole shoe of an electromagnetic transducer on the magnetic track of the record.

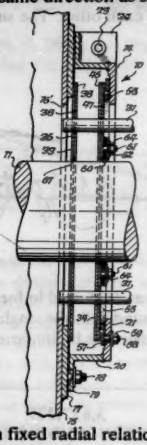
3,627,331
AUTOMATIC CARD DEALING MACHINE
Marlo W. V. Erickson, 6968 S. San Fernando, Tucson, Ariz. 85706
Filed July 21, 1970, Ser. No. 56,893
Int. Cl. A63f 1/14
U.S. Cl. 273–149R **5 Claims**



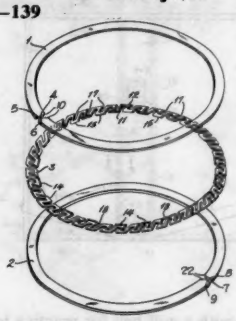
An automatic card dealing machine comprising a base member which contains a driving mechanism. A hollow top section is removably disposed on the base to be rotated about a vertical axis by said driving mechanism. Disposed between the base member and top section is one of a plurality of cam plates, each having a number of cams thereon corresponding to the number of dealing stations arbitrarily selected. The top section carries a horizontal shaft having a plurality of arms extending therefrom and so disposed as to incrementally rotate the shaft by engagement of successive arms with successive cams upon rotation of the top section. The incremental rotation of the shaft causes incremental rotation of a plurality of flexible arms with pliable tips past the cards to be dealt to eject the cards through an opening in the top section.

3,627,332
SHAFT SEAL ASSEMBLY
Josef Tronser, North Tonawanda, N.Y., assignor to Buffalo Forge Company, Buffalo, N.Y.
Filed Nov. 28, 1969, Ser. No. 880,837
Int. Cl. F16j 15/32
U.S. Cl. 277—65 **15 Claims**

A shaft seal assembly for a shaft which extends through an enlarged opening in a housing wall which is radially movable with respect to the shaft including a seal housing mounted on the housing wall, a pair of spaced sealing discs bearing on opposite side portions of the seal housing under the bias of springs, said sealing discs having a relative radial sliding connection with respect to the seal housing, and a pair of spaced pins extending in the same direction as said shaft for supporting the spaced discs in fixed radial relationship relative to the shaft.



3,627,333
PISTON RING
Donald C. Hill, Concord Township, St. Louis County, Mo., assignor to Eaton Yale & Towne, Inc., Cleveland, Ohio
Filed Jan. 22, 1970, Ser. No. 5,054
Int. Cl. F16j 9/06
U.S. Cl. 277—139 **4 Claims**

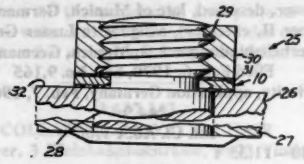


Multiple-piece piston rings for internal-combustion engines in which the cylinder-engaging ring members are biased outwardly by a circumferentially compressible noncylinder-engaging spacer-expander, which is notched in an off-radial direction to minimize the likelihood that the gap-ends of the cylinder-engaging members may hang on parts of the spacer-expander member, and wherein the surfaces which transmit radial thrust extend in a substantially off-axial direction to wedge the cylinder-engaging rings axially apart into so-called "side-sealing"relationship with the sides of a ring groove.

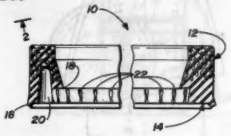
3,627,334
FLUID-SEALING WASHER AND JOINT ASSEMBLY
Robert R. Reddy, 1195 Michillinda Blvd., Pasadena, Calif.
Filed Mar. 13, 1969, Ser. No. 806,848
Int. Cl. F16b 43/00, 29/00
U.S. Cl. 277—166 **4 Claims**

A washer for making a fluid-type seal between a pair of surfaces. The washer has an opening through it which carries at least a fragment of a thread so as to prevent the washer from falling off the threaded end of a bolt or stud which forms part of a joint assembly. It also includes a pair of opposed parallel planar surfaces, each of which bears a layer of solid elastomeric material, said layers being not less than 0.001 and not greater than 0.004 inches thick, the material

of which in such a thin layer has the inherent property of deforming to conform to irregularities in a surface brought against it, but without cold flow.

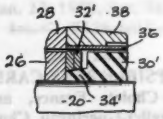


3,627,335
PACKING MEMBER
John H. Wheeler, 3921 Marquette St., Dallas, Tex.
Filed Dec. 8, 1969, Ser. No. 882,930
Int. Cl. F16j *15/32*
U.S. Cl. 277—205 **11 Claims**



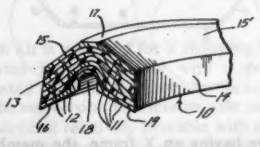
A packing member comprises an annular body having inner and outer sealing lips extending from one of its ends and from a point near its axial center, respectively. A plurality of holes extend axially into the body from equally spaced points along a circle concentric with the body. The member may be split along a line extending through at least two angles axially of the body, if desired.

3,627,336
EXTRUSION RESISTANT PRESSURE RING ASSEMBLY FOR SLIDABLY TELESCOPING MEMBERS
Gordon C. Lawson, 4693 Canoga St., Montclair, Calif.
Filed June 27, 1967, Ser. No. 649,175
Int. Cl. F16j *15/00, 9/00*
U.S. Cl. 277—188 **4 Claims**



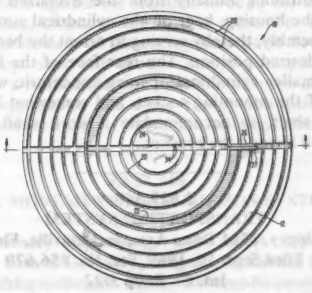
A pressure ring assembly to be installed between slidably telescoping members, the assembly having a resilient pressure ring which is compressed axially and thereby expanded radially into pressured contact with the members, and helical antiextrusion backup rings at the ends of the pressure ring which expand radially to prevent extrusion of the pressure ring between the members.

3,627,337
PACKING RING FOR USE UNDER HIGH TEMPERATURES AND PRESSURES
Aaron J. Pippert, Houston, Tex., assignor to Universal Packing & Gasket Company, Houston, Tex.
Filed Jan. 17, 1969, Ser. No. 791,936
Int. Cl. F16j *15/08*
U.S. Cl. 277—233 **8 Claims**



A packing ring which would normally be used in a stuffing box or the like but which may be of any of numerous cross sections desired for specific installations, the packing ring being made up of alternating layers or laminations of thermosetting materials and thermoplastic materials respectively. The thermosetting materials and the thermoplastic materials could be of an desired materials of the type indicated but would preferably be selected so as to impart to the finished seal ring characteristics of the materials so selected which might be desired for a specific surface. Each layer or lamination would be made up of a fabric treated with rubber or some other suitable natural or synthetic resin and, in the case of the thermoplastic composition materials, would be made up of Nylon, tetrafluoroethylene, or acrylic plastic by way of examples, and in either case being impregnated with rubber or a synthetic resin or the like. The thermosetting materials would consist of fibers or fabrics of cotton, asbestos, fiber glass, or the like, by way of example, likewise impregnated with rubber or a resinous compound. These would be laid in alternating fashion one on top of the other to provide a sufficient volume for the body to be formed, and then would be pressure molded into the cross section shape desired and heat treated until both the thermoplastic and the thermosetting laminations would solidify and bond to one another to make up a monolithic ring.

3,627,338
VACUUM CHUCK
Sheldon Thompson, 2187 Twelfth St., Sarasota, Fla.
Filed Oct. 9, 1969, Ser. No. 864,996
Int. Cl. B23b *31/30*
U.S. Cl. 279—3 **16 Claims**

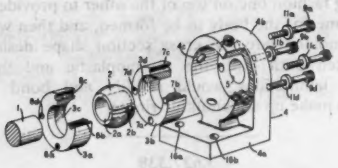


A vacuum chuck having a workpiece holding face including a plurality of concentric circular grooves therein dimensioned to removably receive an elongated resilient sealing member which projects from the face of the chuck to seal against the workpiece when a vacuum is applied to the area enclosed by the seal below the workpiece. Vacuum is applied to the face of the chuck through a passage which terminates in a port opening in the face of the chuck in a diametrically extending cross groove which intersects all the circular grooves. The cross groove is also employed to receive the opposite ends of the sealing member, which is discontinuous to enable the sealing member to be adjusted into any one of the circular grooves depending on the size of the workpiece.

3,627,339
BRACKET FOR MOUNTING SHAFTS
Lorenz J. Burweger, Millington, N.J., assignor to Lee Controls, Inc., Berkeley Heights, N.J.
Filed Feb. 2, 1970, Ser. No. 7,752
Int. Cl. B23b *31/10*
U.S. Cl. 279—8 **4 Claims**

A self-aligning mounting bracket for convenience in orienting work pieces comprising cylindrical shafts and rods. The bracket comprises a ball bushing having a cylindrical bore designed to accommodate the cylindrical work shaft. The ball bushing has a peripheral longitudinal slit parallel to

the axis of the bore. The slitted ball bushing, including the work piece, fits rotatably between a pair of bearings which are disposed coaxially to form a composite semispherical cavity. The assembled bearing members encasing the ball bushing are fitted at one end into a slightly oversized cylindrical socket in a pedestalled housing by means of a plurality of screws whose heads bear against recessed, slightly oversized holes in the rear face of the housing, and whose shanks are interposed longitudinally in aligned holes in symmetrical positions around the edges of each of the bearing elements.



The screws are tightened to urge the two bearing members together against the surface of the slitted ball bushing, and arrest its rotation at a desired position. A plurality of short screws, protruding radially from the oversized cylindrical socket of the housing, bear on the cylindrical surface of the bearing assembly, thereby serving to orient the bearing members in a desired position. The rear face of the housing includes a smaller cylindrical opening concentric with and to the rear of the mounting socket, and somewhat larger than the work shaft, to accommodate a work shaft extending through and beyond the bracket.

3,627,340

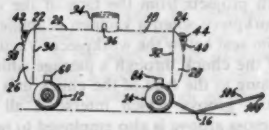
TRANSPORTING SYSTEM

John E. Shippey, 2711 Dunn Ave., Jacksonville, Fla.

Filed Sept. 10, 1969, Ser. No. 856,670

Int. Cl. B60p *3/22*

U.S. Cl. 280—5 **8 Claims**



A system for transporting a cylindrical tank having a circular side and a pair of spaced horizontal legs extending outwardly therefrom including a pair of assemblies, each having a pair of wheels mounted on ends of an axle. Each assembly has a hollow box member positioned above and connected to its axle, the box including a spaced pair of sidewalls extending generally horizontally and vertically with the horizontal portion of each sidewall having a curved upper edge generally conforming to and supporting the tank's circular side adjacent thereto. Each assembly being arranged to engagingly receive between vertical portions of the box sidewalls one of the legs with the same being maintained between the sidewall vertical portions to inhibit relative longitudinal movement of the assemblies with respect to the tank.

3,627,341

FRONT SAFETY BINDING FOR A SKI

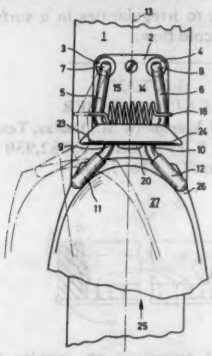
Robert Lusser, deceased, late of Munich, Germany (by Heinz G. Wagner II, executor), assignor to Lusser GmbH & Co., Ski-Sicherheitsbindungen KG, Munich, Germany

Filed Feb. 6, 1970, Ser. No. 9,165

Claims priority, application Germany, Feb. 7, 1969, P 19 06 244.9

Int. Cl. A63c *9/00*

U.S. Cl. 280—11.35 T **3 Claims**



A front safety binding for a ski boot in which two rearwardly diverging jaws arranged on two independently swingable spring-biased arms serve, in their normal position, to engage the toe of the ski boot and which arms, when a predetermined torsional force is exceeded, can be displaced laterally against the action of the spring from a stop plate located between the arms until the toe of the ski boot is released by the laterally displaced jaw. The rear surface of the stop plate is provided with a support of material which, together with the material of the toe portion of the boot, has a lesser coefficient of friction than the material of the stop plate per se.

3,627,342

COLLAPSIBLE BABY CARRIAGE

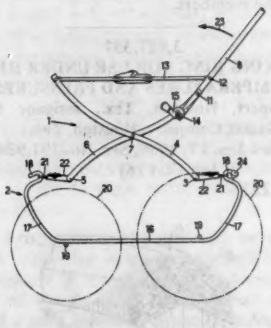
Francois Morellet, Cholet, France, assignor to Societe Anonyme dite: Morellet-Guerineau, Cholet, France

Filed Dec. 17, 1969, Ser. No. 885,732

Claims priority, application France, June 16, 1969, 6920002

Int. Cl. B62b *11/00*

U.S. Cl. 280—36 B **5 Claims**



Baby carriage having an X frame, the members of which are pivotally connected, and a U-shaped spring suspension.

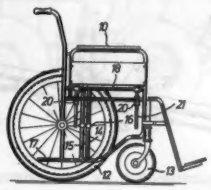
The lower ends of the X are slidably attached to the arms of the U. When the X is short and tall, the frame tensions the spring members of the suspension and projects above it. When the X is wide and short, the frame slides down on the arms of the U so that it may be stored at a minimum height.

3,627,343

COLLAPSIBLE INVALID CHAIR

Wilhelm Meyer, 3 Kleinbahnhofstrasse, 4973 Vlotho, Weser, Germany

Filed Aug. 26, 1969, Ser. No. 853,035
Claims priority, application Austria, Oct. 16, 1968, A10123/68
Int. Cl. B62b *11/00*
U.S. Cl. 280—39 10 Claims



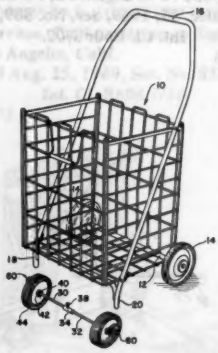
An invalid chair has two side frames supporting a seat, and a wheel on each frame. The frames are joined by two crossing struts, with a joint between said struts at the crossing point which provides two axes of rotation for the struts. One (transverse) axis of rotation enables the frames to rotate relative to each other and thus assist progress over rough ground. The other longitudinal axis of rotation gives scissorslike movement to the struts, enabling the chair frames to be collapsed towards each other for transport.

3,627,344

CONVERSION KIT FOR A SHOPPING CART

Anthony Rizzuto, 37-07-92nd St., Jackson Heights, N.Y.

Filed Jan. 23, 1970, Ser. No. 5,304
Int. Cl. B62b *3/02*
U.S. Cl. 280—47.2 9 Claims



A conversion kit is provided for a shopping cart including a basket portion having an axle with a pair of wheels rotatably mounted thereon, the cart also including a pair of spaced legs. The conversion kit includes axle means comprising a pair of portions relatively movable with respect to one another, and locking means is provided for locking the portions of this axle means in adjusted portion. Clamp members are secured to opposite ends of the axle means of the conversion kit and receive the lower ends of the legs of the shopping cart to convert a two-wheeled shopping cart into a four-wheeled shopping cart.

3,627,345

ENERGY ABSORPTION DEVICES FOR VEHICLES

Noel Le Mire, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France

Filed Dec. 8, 1969, Ser. No. 882,843
Claims priority, application France, Dec. 9, 1968, 177205
Int. Cl. B62d *1/02*
U.S. Cl. 280—87 2 Claims

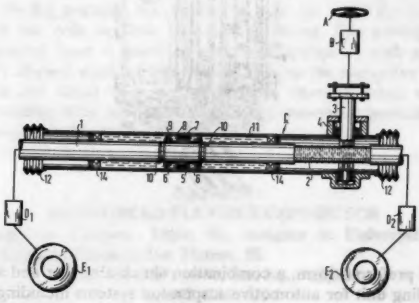
Energy absorption device comprising a fixed element and a movable element both connected to a frame structure and to the seat of a vehicle equipped with anchor means for safety belts or harnesses, and adapted to pivot about an axis rigid with the vehicle against the resistant force of the energy absorption device, characterized in that a member rigid with said movable element of the energy absorption device or of said seat cooperates with another energy absorption device mounted on a retractable or collapsible element in the passenger's compartment, said other energy absorption device being disposed for example within the steering column.

3,627,346

STEERING MOVEMENT TRANSMISSION SYSTEM FOR VEHICLES

Nikolaus Dorner, Kipfenberg, and Albert Dillenburger, Buchholz, both of Germany, assignors to Stabilus Industrie- und Handelsgesellschaft mbH, Koblenz-Neuendorf, Germany

Filed Feb. 4, 1970, Ser. No. 8,602
Claims priority, application Germany, Feb. 4, 1969, P 19 05 306.6
Int. Cl. B62d *3/12*
U.S. Cl. 280—90 7 Claims



Steering systems for vehicles comprise transmission members connected in series with one another. These transmis-

sion members transmit the rotational movements of the steering wheel to the road wheels for control of the direction of the road wheels. The transmission elements include a hydraulic damping cylinder which prevents heavy shocks from the road wheels from reaching the steering wheel and wobbling of the road wheels.

3,627,347

IDLER ARM JOINT

Edward J. Herbenar, Detroit, Mich., assignor to TRW, Inc., Cleveland, Ohio

Filed Nov. 26, 1969, Ser. No. 880,283
Int. Cl. B62d *17/00*
U.S. Cl. 280—95 A **4 Claims**

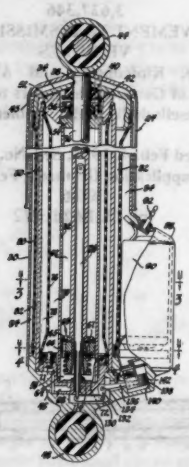
A bracket support joint for an idler arm in the steering linkage of the dirigible wheels of a vehicle. The support includes a bracket portion and a joint portion, the bracket having a hollowed end internally threaded which receives an externally threaded bolt which in turn is press fitted into the idler arm linkage member with the bolt extending upwardly into the internally threaded end of the bracket member.

3,627,348

LEVELING UNIT WITH INTEGRAL MOTOR-DRIVEN FLUID PUMP

Gerard T. Klees, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 18, 1970, Ser. No. 47,421
Int. Cl. B60g *17/08*
U.S. Cl. 280—124 **3 Claims**



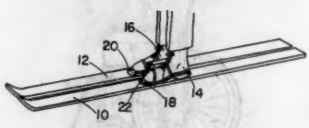
In preferred form, a combination shock absorber and self-leveling unit for automotive suspension systems including an integral electric motor-driven fluid pump which draws hydraulic fluid from the shock absorber's reservoir chamber, pressurizes it and transfers it to a high-pressure booster chamber connected to the shock absorber's compression chamber where it produces a force on the piston rod area. A height-sensing device which energizes the pump motor has a laterally deflectable cantilevered arm supported at one end by a flexible tube and whose other end is free to contact a cammed surface on the shock absorber piston rod. Lateral movement of the lever by the action of the cammed surface actuates an electrical switch to energize the electric pump motor when in one operative position and opens a bleed valve when in another operative position.

3,627,349

SKIING DEVICE

Jack T. Barry, 1322 Lucinda Way, Tustin, Calif.

Filed Oct. 15, 1969, Ser. No. 866,702
Int. Cl. A63c *11/00*
U.S. Cl. 280—11.37 E **5 Claims**



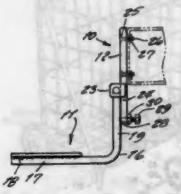
A device for use by a skier in maintaining his skis in parallel relation during use while permitting fore and aft and up and down relative movement thereof comprising plates strapped to the inside of the skier's feet or boots and a vertical channel means fixed to the interior surface of each such plate. The channel means of one plate carries a slide member therein for movement in vertical rectilinear directions and, in turn, carries a horizontally disposed channel. The other channel means also carries a slide member for vertical rectilinear movement therein, but also has a horizontal slide member which slidably fits in the horizontal channel of the other plate. Thus the vertical channels and respective slide members permit relative up and down movement of the skis while the horizontal channel and slide permit horizontal relative movement therebetween.

3,627,350

BUMPER FLIP STEP

Denver F. Cross, 3036 N. Arlington Pl., Portland, Oreg.

Filed Dec. 31, 1969, Ser. No. 889,651
Int. Cl. B60r *3/02*
U.S. Cl. 280—166 **3 Claims**



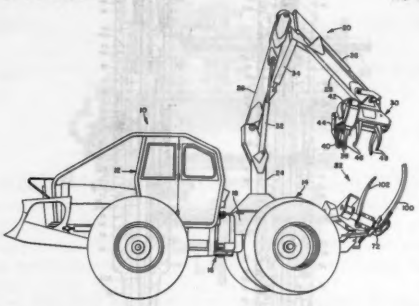
A retractable step for an automotive vehicle, the step comprising a horizontal plate forming a tread which is supported upon a pair of angle configurated brackets which are pivoted at one set of ends. The tread when retracted rests over the vehicle bumper, and the tread is movable to an operative lowered position where a person may conveniently step thereupon when entering or leaving the vehicle.

3,627,351

TREE SHEARING AND BUNCHING APPARATUS

Robert Paul Zimmerman, Champaign, Ill., and Kenneth Quentin Kessler, Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Apr. 22, 1970, Ser. No. 30,695
Int. Cl. B60p 7/00
U.S. Cl. 280—179 R 10 Claims



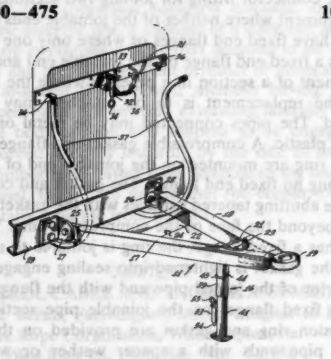
A tree shear assembly and an accumulator assembly are supported on a mobile vehicle. The tree shear assembly includes a shear head mounted at the end of an articulated boom structure and having tongs for grasping a tree during the shearing operation and for holding the tree while the tree is swung into a skidding position wherein the lower portion of the tree is placed for support at two points on the accumulator assembly. The accumulator assembly includes a pair of pivoted tongs or arms which are swung towards and away from each other by a hydraulic actuator respectively for holding trees on the accumulator bed and for either permitting additional trees to be placed on the bed, or for permitting the entire load to be dropped in a bunch. The actuator is connected in a hydraulic system which supplies a source of constant fluid pressure to the actuator which in turn urges the arms into holding engagement with the trees on the accumulator assembly. The accumulator assembly is pivotally mounted on the vehicle for movement about vertical and horizontal axes so that the trees being skidded trail the vehicle and follow uneven terrain without placing undue stresses on the accumulator assembly.

3,627,352

DRAWBAR CONSTRUCTION

Jack Canole, Cerritos, Calif., assignor to Signal Trucking Service, Ltd., Los Angeles, Calif.

Filed Aug. 25, 1969, Ser. No. 852,638
Int. Cl. B60d 1/14
U.S. Cl. 280—475 10 Claims



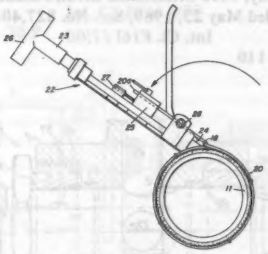
A drawbar construction for a self-propelled vehicle adapted to be towed in tandem from a lead vehicle comprised of angularly disposed struts converging to a point where they support a hitch eye, and having their remote ends rotatably mounted on the frame of the vehicle to be towed. Latch means at the front of the vehicle hold the drawbar in inoperative, substantially vertical position against the front of the vehicle. Pivotally mounted on a crossbar between the struts is a supporting leg adapted to be latched to the drawbar in inoperative position, and rotatable relative to the drawbar into a vertical position where it supports the drawbar hitch eye in position to be engaged automatically with a hitch on the lead vehicle. The supporting leg for the drawbar is vertically adjustable to locate the hitch eye in proper relation for its engagement with the forward hitch.

3,627,353

PIPE JOINT

Barry J. Blumenfeld, Randallstown, and William T. Samuelson, Timonium, both of Md., assignors to Cast Iron Soil Pipe Institute, Washington, D.C.

Filed Nov. 3, 1969, Ser. No. 873,366
Int. Cl. F16l 35/00
U.S. Cl. 285—39 10 Claims



A pipe joint for two pipe sections, including an annular packing member of compressible, leakproof material bridging the adjoining pipe sections and a semistiff, flexible clamping band, transversely corrugated substantially throughout its length, overlying the packing member with its longitudinal extremities overlapping. A clamping wire unit secures the clamping band tightly around the packing member and adjoining pipe ends and consists of a single strand of wire bent into the form of a "U" to provide two leg portions or shanks connected by a bight portion. The leg portions are coiled around the clamping band one or more times and passed beneath and through the bight portion, and the respective coils are then tightened by a clamping tool, to compensate for tolerance differences in the pipes being joined simultaneously but independently after which the ends of the leg portions are bent back over the bight portion to lock the coils in their tightened positions. The corrugated clamping band is provided around its periphery with annularly aligned staples which loosely receive the respective wire coils and retain them in place on the clamping band, while permitting their relatively free sliding movement around the clamping band during tightening.

3,627,354

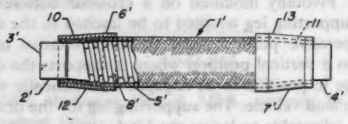
REINFORCED FLEXIBLE CONNECTOR

George G. Toepper, Elgin, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 27, 1970, Ser. No. 23,354
Int. Cl. F16l 9/14
U.S. Cl. 285—55 7 Claims

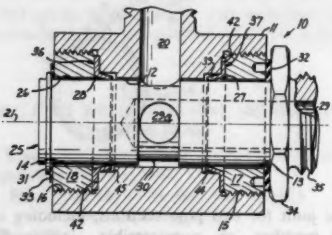
A flexible connector and the method of fabricating the same. The connector includes a tubular member having a central corrugated portion and uncorrugated end portions. A sleeve of braided strands is disposed around the tubular

member to encompass the corrugated central portion and overlap at least a part of the uncorrugated end portions of the tubular member. A collar is disposed in a force-fit



manner around each end of the sleeve to overlap the part covering an uncorrugated end portion to thus secure the sleeve in place and provide reinforcement for the corrugated portion of the tubular member.

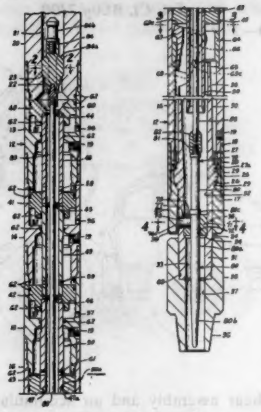
3,627,355
FLUIDTIGHT SWIVEL JOINT
Robert R. Reddy, 1195 Michillinda Blvd., Pasadena, Calif.
Filed May 23, 1969, Ser. No. 827,404
Int. Cl. F16l *17/00*
U.S. Cl. 285—110 **1 Claim**



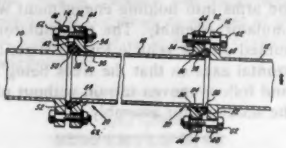
A fluidtight sealing joint having a rotatable rotor mounted in a bore in a body, the bore being tapped by a port and the rotor having an internal passage communicating with said port. The rotor includes a pair of cylindrical portions on opposite sides of the port. Adjacent to each of these cylindrical portions is a lip seal having a mounting flange secured to the body, and a sealing lip bearing against the respective cylindrical portions. The sealing lips taper toward the cylindrical portion as they extend axially toward the port so as to form continuous seals symmetrical around the central axis of the bore and of the rotor so as to make a fluid seal at all rotational positions of the rotor.

3,627,356
DIRECTIONAL DRILLING APPARATUS WITH RETRIEVABLE LIMITING DEVICE
Edwin A. Anderson, 1104 Chimney Rock Road, Houston, Tex.
Filed Nov. 19, 1969, Ser. No. 877,978
Int. Cl. E21b *7/08;* **F16l** *27/04*
U.S. Cl. 285—118 **23 Claims**

A deflection tool is provided for use in the directional drilling of a well bore into the earth. The tool includes a lower tubular assembly pivotally mounted within an upper tubular assembly. I use, the upper assembly is coupled to the lower end of a string of drill pipe and the lower assembly is coupled to a downhole fluid motor unit which drives a rotary drill bit. Drilling fluid flowing down the drill string drives a piston and lever mechanism located in the upper tubular assembly for urging the lower tubular assembly to pivot relative thereto. when a zero or other less than maximum pivot angle is desired, a retrievable limiting probe is run into the deflection tool for setting a limiting plug which limits the extent of the pivotal movement. Different pivot angles are obtained by using limiting probes of different size.



3,627,357
PIPE CONNECTOR FITTING
Forest E. Sanders, Box 206, Green City, Mo.
Filed Oct. 22, 1969, Ser. No. 868,519
Int. Cl. F16l *55/00*
U.S. Cl. 285—174 **14 Claims**



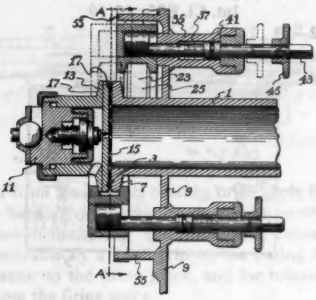
A pipe connector fitting for joining two sections of pipe in axial alignment where neither of the joinable ends of the pipe sections have fixed end flanges or where only one of the sections has a fixed end flange on the joinable end and including replacement of a section in a pipeline where the sections to which the replacement is to be attached may be rigidly anchored. The pipes connected may be metal or plastic or metal to plastic. A compressible gasket-and-flange-type compression ring are mounted on the joinable end of a pipe section having no fixed end flange. The gasket and compression ring have abutting tapered surfaces with the gasket projecting slightly beyond the face of the compression ring. Where one section has a fixed flange, the ring is joinable to such flange so that the gasket is tightened into sealing engagement with the exterior of the joined pipe and with the flange and ring. With no fixed flanges on the joinable pipe sections, a like compression ring and gasket are provided on the opposed joinable pipe ends with a spacer washer or wafer intermediate such ends so that the respective gaskets are compressed into sealing engagement against the pipe and against opposite faces of the washer. A stepped shaped spacer washer is provided for joining pipes of different diameters.

3,627,358

COUPLING FOR IMPERFORATE FLANGES

John Ray Polston, 3346 South Wheeling, Tulsa, Okla.

Filed Nov. 14, 1969, Ser. No. 876,894
Int. Cl. F16l 23/00
U.S. Cl. 285—406 4 Claims



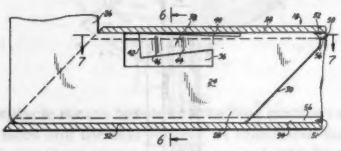
Imperforate flanges are releasably coupled with a wedging action by a member that moves radially relative to the flanges and that has an arcuate recess having tapered sidewalls. The recessed member is engaged with and disengaged from the flanges by a rotatable cam and has a sliding connection that restrains its movement to movement in a plane parallel to the axis of the flanges.

3,627,359

FRAME CORNER LOCK

Richard D. Paul, Mentor, Ohio, assignor to National Screen Service Corporation, New York, N.Y.

Filed Jan. 6, 1970, Ser. No. 902
Int. Cl. F16b 7/16
U.S. Cl. 287—189.36H 4 Claims



A corner lock for coupling adjacent frame rails of a poster frame or the like comprises angularly disposed arms each adapted to be inserted into a channel of a different adjoining rail. Each arm comprises a body part adapted to be inserted into the rail and having a resilient member of generally sinuous shape attached thereto, said member having longitudinally spaced parts respectively extending laterally beyond sides of the body portion and adapted to be engaged and resiliently forced laterally inwardly by the side of the channel. The member has a biting edge adapted to dig into a side of the channel, thereby to ensure that the corner lock does not accidentally separate from the rail.

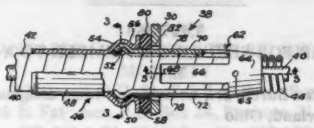
3,627,360

CONTROL CABLE AND ANCHOR ASSEMBLY

Harmond E. Berno, Farmington, Mich., assignor to Pennsylvania Wire Rope Corporation, Williamsport, Pa.

Filed May 25, 1970, Ser. No. 41,156
Int. Cl. F16b 9/00
U.S. Cl. 287—20 R 21 Claims

One part of a cable anchor comprises a sleeve adapted to be swaged around a cable sheath and having one or more receptacles therein. The other part has resilient prongs bendable inwardly for insertion within the sleeve. Outward projections on the prongs engage within the receptacles when the prongs return resiliently outwardly to fasten the two parts



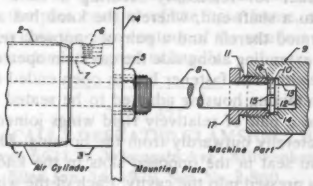
together. When the cable sheath is inserted into the fastened parts, it prevents inward movement of the prongs and locks the parts together. The sleeve is swaged down around the cable sheath to complete the assembly.

3,627,361

FLUID MOTOR WITH A REMOVABLY LOCKED PISTON ROD CONNECTION MEANS

Charles W. Bimba, 101 Main St., Monee, Ill.

Continuation-in-part of application Ser. No. 646,052, June 14, 1967, now Patent No. 3,426,656. This application Oct. 28, 1968, Ser. No. 770,917
Int. Cl. F16j 7/00
U.S. Cl. 287—20 P 3 Claims



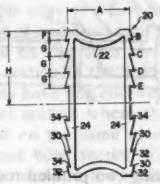
In an air cylinder or other fluid motor unit, a special connection means is provided which eliminates the problem of having threading on the end of the piston rod itself and in lieu thereof has a split ring in a groove positioned near the end of the rod such that a "slip-on" threaded locking nut attachable to the work load piece can bear against the ring and clamp the rod tightly into a rod receiving recess within such workload piece. Split-ring and clamping nut or bushing type connection means for the piston rod may also be provided for threadfree attachment to the piston in the motor unit.

3,627,362

SPLINE AND SEAT CONNECTOR ASSEMBLIES

John H. Brenneman, 389 Prospect Ave., Princeton, N.J.

Continuation-in-part of application Ser. No. 837,495, Sept. 1, 1959, now abandoned, and a continuation-in-part of 514,573, Dec. 17, 1965, now abandoned, which is a continuation-in-part of application Ser. No. 513,652, Nov. 26, 1965, now abandoned, which is a continuation-in-part of application Ser. No. 174,554, Feb. 20, 1962, now abandoned. This application Aug. 13, 1969, Ser. No. 859,230
Int. Cl. F16b 5/07
U.S. Cl. 287—20.92 B 20 Claims



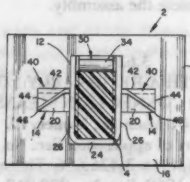
A continuous spline and seat connector assembly that is adapted for use in the construction of buildings such as hous-

ing. The spline may be inserted into a seat member in the direction of the depth of the seat member and its removal opposed by a locking action which occurs after the insertion of the spline.

3,627,363
FASTENER FOR SECURING A MEMBER TO A SHAFT END

Harold S. Van Buren, Jr., Lexington, Mass., assignor to TRW Inc., Cleveland, Ohio

Filed Aug. 21, 1970, Ser. No. 65,829
Int. Cl. F16d *1/06*
U.S. Cl. 287—53 H **6 Claims**

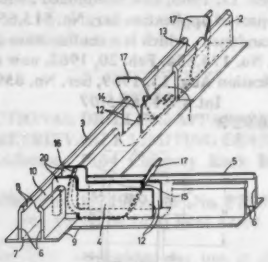


A fastener for releasably securing a knob or the like member to a shaft end, wherein the knob has an open end cavity formed therein and a pair of opposed, relatively narrow slots extending along side the cavity in open communication therewith. The fastener has an open ended shaft receiving and retaining housing adapted to be seated in the knob cavity and a pair of relatively rigid wings joined to and extending laterally outwardly from the housing. The wings are adapted to seat in the opposed slots in the knob when the housing is pressed into the cavity. Each of the wings carries a barblike projection which bitingly grips the surfaces of the knob adjacent the slots to secure the fastener in the assembly. A leaf spring disposed within the housing is adapted to be placed in tensioned retaining engagement with a surface area of a shaft end inserted into the fastener housing.

3,627,364
JOINT FOR CONNECTING PROFILED RODS

Martin Antoon Van Riet, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 18, 1970, Ser. No. 12,295
Claims priority, application Netherlands, Feb. 25, 1969, 6902949
Int. Cl. F16b *7/22*
U.S. Cl. 287—189.36 **5 Claims**

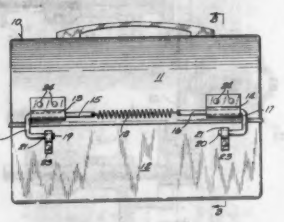


A joint for connecting two profiled rods of U-shaped section and having a coupling manufactured from sheet material and comprising two resilient lugs by which the coupling is clamped on the profiled rods to be joined; all the joints occurring in mounting a frame, for example, a longitudinal joint, a transverse joint and a cross joint, can be made by means of only two types of couplings.

3,627,365
CLOSURE FOR LUNCH BOX

Gertrude E. Mace, 825 South 10th St., Milwaukee, Wis.

Filed July 2, 1970, Ser. No. 51,763
Int. Cl. E05c *19/10*
U.S. Cl. 292—31 **1 Claim**

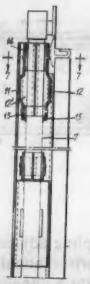


A pair of fasteners for a lunch box, said fasteners being spring pressed in the closed position, each unit formed of an elongate rod, a top portion housed slidably horizontally in a sleeve at the front lower portion of the lunch box cover, an intermediate integral portion of said rod bent vertically downwardly, and a return bent portion integral with said latter portion adapted to latch within an axially horizontal keeper on the top frontal portion of the lunch box body, and coil spring means connecting the upper elongate rod portions to maintain the closure in latched position.

3,627,366
CLOSING DEVICE FOR CONTAINERS FOR THE TRANSPORT OF GOODS

Piero Cerutti, Sesto Calende Via Sempione 37, Verese, Italy

Filed Sept. 12, 1969, Ser. No. 857,329
Int. Cl. E05c *3/04*
U.S. Cl. 292—218 **4 Claims**



A closing device for goods container doors in which the locking is done by means of two catches placed at the ends of motion shafts mounted on the door itself, and characterized by the fact that it consists of a channel piece which covers, at least in part, the catch motion shaft, protecting this shaft and reinforcing the container door, and being provided with units to support and guide the shaft.

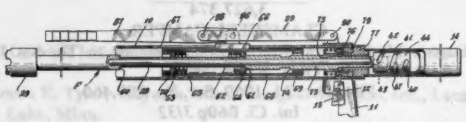
3,627,367
TOOL FOR REMOVING AND APPLYING CONNECTORS

Sidney Levy, Norwalk, Conn., assignor to Burndy Corporation

Filed Oct. 24, 1969, Ser. No. 869,304
Int. Cl. B25b *27/14;* **B23p** *19/04*
U.S. Cl. 294—16 **17 Claims**

A tool for swiftly applying a connector such as a terminator, to a contact bushing on a transformer and for also

removing the terminator. A push or pull firing piece can be moved into one or the other of opposed end positions in the casing in which it is locked by a detent while a spring is compressed against the firing piece. When the detent is moved by a trigger, it releases the firing piece for swift movement by the spring. The firing piece will move either to remove the



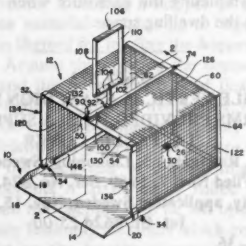
terminator from the contact bushing or to apply the terminator to the bushing depending on its locked position and the compression of the spring. The firing piece carries a gripper which is movable by a hand grip on the casing for gripping the terminator to the firing piece, and for releasing the terminator from the firing piece.

3,627,368

LITTER COLLECTOR AND REMOVABLE HOOD MEANS THEREFOR

Harold Eugene Baughman, 243 San Fernando Way, Daly City, Calif.

Filed Sept. 11, 1970, Ser. No. 71,480
Int. Cl. A01d *11/00*; A47f *13/08*
U.S. Cl. 294—55 **10 Claims**



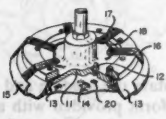
A receptacle means has three attaching portions secured to the two sides and the rear thereof. A removable hood means also includes three corresponding spaced attaching portions secured to the sides and rear thereof. The hood means comprises a rigid framework and an open covering such as a metallic screen thereover. The attaching portions on the receptacle means and the hood means enables the hood means to be quickly connected and disconnected with respect to the receptacle means. A carrying handle is provided in one form of the invention for carrying the overall assembly.

3,627,369

HIGH-TEMPERATURE VACUUM PICKUP

Charles H. Nixon, P.O. Box 141, Carnegie, Pa.

Filed Oct. 10, 1969, Ser. No. 865,266
Int. Cl. A47b *97/00*
U.S. Cl. 294—64 **6 Claims**



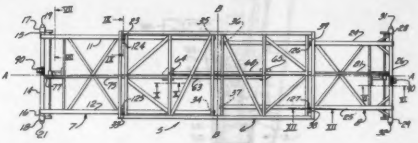
A high-temperature vacuum pickup apparatus is provided having a vacuum head, a depending elastomeric ring surrounding the head and sealingly attached and a sheet of a material selected from the group consisting of heat-reflecting and heat-retarding materials and combinations thereof surrounding and covering the elastomeric material.

3,627,370

EXPANDABLE SPREADER WITH BELOW-DECK MOBILITY

Donald R. Whiteman, R.D. 01, Fairfield Park, Roxboro, N.C., and Jack E. Fathauer, P.O. Box 24, Roxboro, N.C.

Filed Oct. 21, 1969, Ser. No. 868,107
Int. Cl. B66c *1/00*
U.S. Cl. 294—67 R **7 Claims**



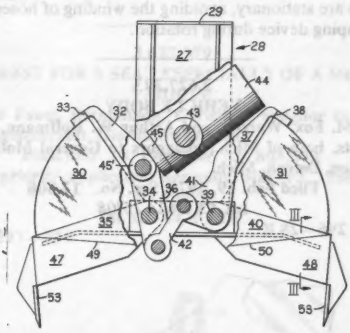
An expandable spreader capable of handling cargo containers varying, for example, from 20 to 40 feet in length having subframes which are traversable within a main frame with the spreader as a whole being contractable to substantially within the plan contour of the base frame, and, most importantly, within the plan contour of the smallest container which the spreader is designed to handle.

3,627,371

HYDRAULICALLY OPERATED CLAMSHELL BUCKET

Roy O. Billings, 6621 W. Wisconsin Ave., Milwaukee, Wis.

Filed Jan. 14, 1970, Ser. No. 2,860
Int. Cl. B66c *3/02*
U.S. Cl. 294—71 **1 Claim**



A clamshell bucket has complementary bowl sections pivotally supported from a head. Arms which are welded at one end to the outer edge of a first bowl section extend inwardly over the top of said bowl section where they are connected to the head on the same pivotal connection which connects the bowl section to the head, said arms having extensions. Other arms have one end welded to the outer edge of the second bowl section where they are pivotally connected to the head on the same pivotal connection which connects said second bowl section to the head, said arms having upward extensions in the nature of a bellcrank and there being an equalizer link pivotally connecting said upward extensions with the extensions of the arms for the first bowl section. An obliquely disposed hydraulic cylinder is pivoted on the horizontal axis to the head above the bucket,

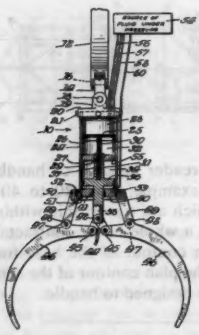
said cylinder having a piston rod which is pivotally connected to the arms of the first bowl section intermediate their length. Cutting lips at the sides of the bucket are flared downwardly and outwardly in a novel manner, when the bowl sections are open, to facilitate the digging of trenches and the like.

3,627,372

CONTINUOUS ROTATION GRAPPLE

E. Robert Carpenter, Brookfield, and Eugene J. Kielb, Waukesha, both of Wis., assignors to Hydraulic Machinery Company, Inc., Milwaukee, Wis.

Filed Dec. 8, 1969, Ser. No. 883,120
Int. Cl. B66c *13/14*
U.S. Cl. 294—88 15 Claims



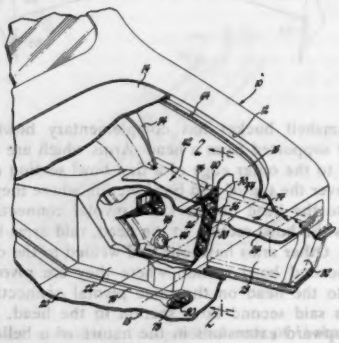
A hydraulically powered material-handling device wherein rotation and/or clamping are required. Clamping force is provided down the centerline of rotation, allowing continuous rotation without the use of a swivel. This is accomplished by placing the motor or speed changer output shaft on the same centerline as the clamping cylinder. Also, all hydraulic connections are stationary, avoiding the winding of hoses around the clamping device during rotation.

3,627,373

VEHICLE BODY

Robert M. Fox, Warren, and Arthur W. Hoffmann, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 19, 1970, Ser. No. 12,808
Int. Cl. B62d *25/08*
U.S. Cl. 296—28 R 4 Claims



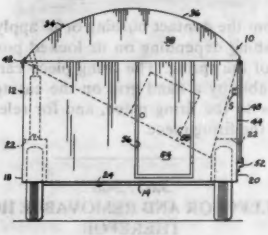
The bootleg pocket of a vehicle body is completely filled with a foamed-in-situ mass of rigid synthetic resin which is adhered to the body members defining the pocket. The upper exposed surface of the mass of resin is located angularly to the rear floor pan of the body and a cover adhered to this surface and supported by the mass of resin provides a continuation of the rear floor pan and also drains liquid to the floor pan.

3,627,374

CLAMSHELL CAMPER

Eugene M. Richison, Kinta, Okla., assignor to Thomas H. Conklin, Stigler, Okla., a part interest

Filed Dec. 31, 1969, Ser. No. 889,460
Int. Cl. B60p *3/32*
U.S. Cl. 296—23 4 Claims



A substantially boxlike housing is provided with a hingedly connected arched top having depending wall panels attached thereto for completing the enclosure when the top is raised for increasing the dwelling space.

3,627,375

DETACHABLE VERTICAL STANCHION FOR VEHICLE PLATFORMS PROVIDED WITH A SUPPORT FOR A TARPAULIN COVER

Goran Rosen, Radagatan 5, Lidkoping, Sweden

Filed Nov. 7, 1969, Ser. No. 874,897
Claims priority, application Sweden, Nov. 15, 1968, 15516/68
Int. Cl. B62d *25/00*
U.S. Cl. 296—36 6 Claims

In order to facilitate the loading and unloading of vehicles having a load platform provided with a tarpaulin cover carried by a pillar structure in which each pillar thereof is composed of a lower stanchion and an upper support rod interconnected by an open hinge in such a manner that the rod

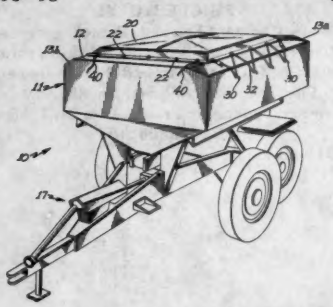
and the stanchion may be swung into an aligned position. The hinge is composed of a bearing journal at the free end of either the stanchion or the rod, and a bearing cup is located some distance from the free end of the rod or the stanchion, respectively, with the component provided with the bearing cup having a wall designed to guide the bearing towards the cup during an initial part of the fitting together operation.

3,627,376

COVER MEANS FOR AGRICULTURAL TRANSPORT DEVICES

Loren E. Tyler, Wayzata, Minn., assignor to Letco, Inc., Long Lake, Minn.

Filed Sept. 4, 1969, Ser. No. 855,295
Int. Cl. B60j *11/00*
U.S. Cl. 296—98 **10 Claims**



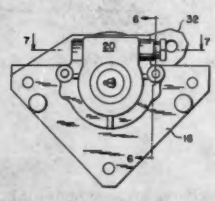
A fertilizer spreader including a hopper or tank for containing particulate material and having a large rectangular opening at the top thereof for loading the hopper and a cover for the opening. Around the opening the hopper has an upstanding flange and the cover which is of flexible material such as a tarp, is tightly secured to the hopper, outside of the flange, at one side of the opening, preferably at the front. The cover is sufficiently large so that it overlaps the flange on all sides and at the back end of the opening has a rigid member which permits it to be easily rolled forward and secured there when the opening is to be left open. It also has a plurality of elastic fastening members which cooperate with appropriate hooks on the hopper to provide quick release means for securing the cover under tension in its closed position wherein it extends tightly downward over the flange to provide a substantially weathertight seal with the flange. The cover, being secured at one edge to the hopper and having means which render it easily secured to the hopper in its extended position is easy to handle and can quickly be opened or closed by a single person.

3,627,377

TOP LIFT ACTUATOR

Joseph Pickles, Birmingham, Mich., assignor to Ferro Manufacturing Corporation, Detroit, Mich.

Filed Nov. 18, 1969, Ser. No. 877,623
Int. Cl. B60j *7/12*
U.S. Cl. 296—117 **13 Claims**



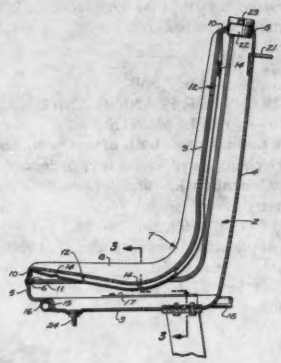
An actuator for a collapsible top of a vehicle comprising a compact arrangement of series connected planetary or epicyclic gear sets including a fixed ring gear common to all sets serving as a pivot mounting for an actuating arm.

3,627,378

SEAT FUEL TANK

Kenneth E. Brock, 3084 West Ball Road, Anaheim, Calif.

Filed June 12, 1970, Ser. No. 45,853
Int. Cl. A47c *7/62*
U.S. Cl. 297—194 **8 Claims**



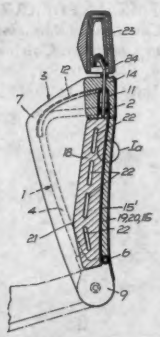
A fuel tank, intended particularly for lightweight aircraft or sports vehicles, which is constructed in the shape of a seat; the tank comprising a rearward and underlying component and a complementary forward and overlying component which are joined together around their margins to form a hollow seat structure, there being a reinforcing member within the tank secured to the forward and overlying component and exposed fastening means for attaching the seat fuel tank to a vehicle.

3,627,379

BACKREST FOR A SEAT ESPECIALLY OF A MOTOR VEHICLE

Eberhard Faust, Bernhausen, Germany, assignor to Recaro Aktiengesellschaft, Glarus, Switzerland

Filed Mar. 10, 1969, Ser. No. 805,644
Claims priority, application Germany, Mar. 13, 1968, P 17 53 009.5
Int. Cl. A47c *3/00*
U.S. Cl. 297—284 **1 Claim**



A padded backrest for a seat which has a frame with an upper and a lower crossbar and lateral arms secured to the

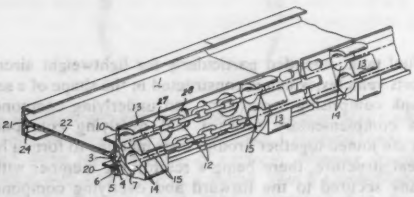
crossbars, the upper crossbar extending within the upper part of the padding and the lateral arms being bent forwardly and downwardly from the upper crossbar and carrying lateral padding elements for supporting at least a part of the upper body of an occupant of the seat in lateral directions, and a shell-like padding support secured to the upper and lower crossbars and consisting of a stiff but deformable material. At least the central part of the padding which is adapted to engage with the back of the occupant is slidable upwardly and downwardly along the padding support relative to the frame. At least this central part is provided with transverse pockets into which, if desired, inserts may be placed to change the cross-sectional shape of the backrest.

3,627,380

GUIDING MEANS FOR PLANING AND DIGGING IMPLEMENTS

Pal Frenyo; Karl-Heinz Hafer, both of Bochum, and Walter Pelka, Gelsenkirchen, all of Germany, assignors to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei mbH, Bochum, Germany

Filed Oct. 3, 1969, Ser. No. 863,527
Claims priority, application Germany, Oct. 7, 1968, P 18 01 612.1
Int. Cl. E21c *27/35*
U.S. Cl. 299—34 **8 Claims**



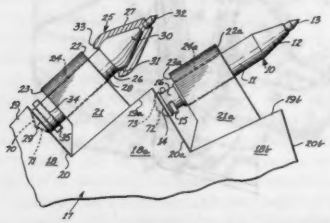
A guiding arrangement for a linearly moveable tool supporting carriage in a mining machine in which a frame has a guiding rail member for the carriage on one side made up in sections in end to end relation. The guiding rail member has projections thereon extending toward the carriage and spaced along the rail member and each has a pair of tubular passages for the reaches of a link chain which drives the carriage. Each passage is longer than the distance between the adjacent ends of a pair of like links in the respective chain length and slots give access to the passages with each slot widening at its opposite ends.

3,627,381

MOUNTING MEANS FOR CUTTER BITS

Claude B. Krekeler, Cincinnati, Ohio, assignor to The Cincinnati Mine Machinery Company, Cincinnati, Ohio

Filed Jan. 14, 1970, Ser. No. 2,874
Int. Cl. E21c *25/46*
U.S. Cl. 299—86 **6 Claims**



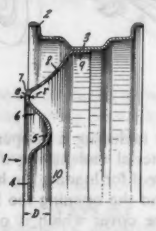
Mounting means for cutting tools of the type having an elongated shank of circular cross section, a hard cutting tip at one end and an abutment surface at the other end. The mounting means comprises a body having a forward surface, a rearward surface and a shank receiving perforation extending through the body from the forward surface to the rearward surface. The shank receiving perforation is of such diameter as to permit free rotation of the cutting tool shank therein, and is of such length that the abutment end of the cutting tool shank extends beyond the rear surface of the body. The body is mounted on a driven element of a mining machine. An abutment means is provided in association with the driven element, the abutment means presenting an abutment surface cooperating with the abutment surface on the cutting tool shank and spaced from the rear surface of the mounting means body.

3,627,382

VEHICLE WHEEL

Daniel Lejeune, Clermont-Ferrand, France, assignor to Compagnie General Des Etablissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrand (Puy-de-Dome), France

Filed Dec. 24, 1969, Ser. No. 887,959
Claims priority, application France, Dec. 24, 1968, 180571
Int. Cl. B60b *3/04*
U.S. Cl. 301—63 R **4 Claims**



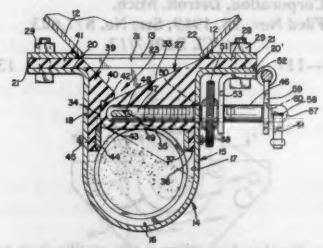
A wheel, for instance a metal wheel, includes a well base rim, also known as a drop center rim, and a disk which has, between the plane of its attachment to the hub and the junction of the disk with the rim, an annular ridge which is pressed out of the disk, the thickness of the disk in the zone of the crest of the ridge being greater than in the adjacent parts of the ridge.

3,627,383

PNEUMATIC DISCHARGE ARRANGEMENTS FOR HOPPERS

Franklin P. Adler, Michigan City, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed July 22, 1969, Ser. No. 843,560
Int. Cl. B65g *53/46*
U.S. Cl. 302—52 **4 Claims**



A pneumatic discharge arrangement for hoppers includes a pneumatic tube having an upper slot for receiving materials and discharging them from the hopper. The tube is provided

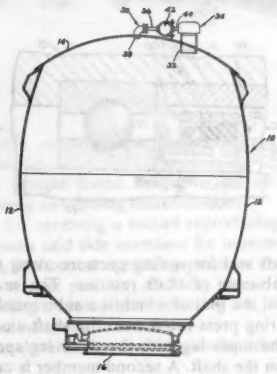
with a valve arrangement that includes a resilient valve which during the discharging operation lies to one side of the slot in a retracted position. To close the slot a plurality of thrust elements stretch the valve from its retracted position across the slot into engagement with a valve seat supported on the other side of the tube.

3,627,384

SAFETY RELIEF VALVE STRUCTURE FOR RAILWAY CARS

Dallas W. Rollins, St. Charles, and Richard H. Dugge, St. Louis, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Sept. 11, 1969, Ser. No. 857,098
Int. Cl. B65g *53/40*
U.S. Cl. 302—53 **1 Claim**



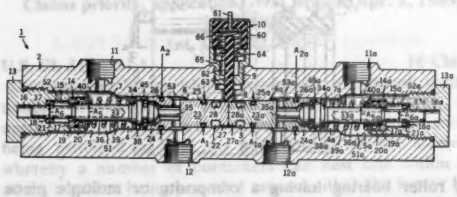
A safety relief valve structure for a railway car having an enclosed shell which is adapted to be placed under an internal fluid pressure, especially for unloading particulate lading. A pilot-operated safety valve on the car has a main valve inlet communicating directly with the interior of the car, and a separate pilot line provides fluid communication between the interior of the car and the safety relief valve for controlling the operation of the valve. A filter is positioned in the separate pilot line and minimizes any passage of air entrained lading to the safety valve through the pilot line. The filter comprises a housing and a filter element within the housing through which the air and any entrained lading particles pass. The filter element has a micron rating between around five and 25 to entrap lading particles of a micron size greater than the micron rating of the filter element.

3,627,385

CONTROL VALVE

Stanley L. Stokes, Florissant, Mo., assignor to Wagner Electric Corporation, Newark, N.J.

Filed Feb. 4, 1970, Ser. No. 8,480
Int. Cl. B60t *8/26, 11/34*
U.S. Cl. 303—6 C **19 Claims**



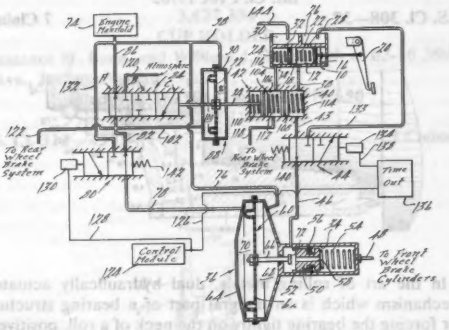
A control valve for use in a split braking system having an indicating member movable from a normal position to a translated position in the event of the failure of one of the separately supplied fluid pressures acting thereon. A proportioning member is biased toward the indicating member and movable in response to a predetermined value of the other supplied fluid pressure toward metering engagement with the indicating member in its normal position to thereafter effect a metered applied fluid pressure in a predetermined ratio with the other supplied fluid pressure. The proportioning member is provided with a pair of opposed areas respectively subjected to the other supplied and applied fluid pressures to effect the predetermined ratio, and a third area is also provided on said proportioning member for subjection to the other supplied fluid pressure and additive to one of the opposed areas to alter the predetermined value of the other supplied fluid pressure at which the proportioning member is actuated to effect metering engagement with the indicating member in its translated position.

3,627,386

FOUR-WHEEL SKID CONTROL SYSTEM

Peter Every, Livonia, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Oct. 8, 1969, Ser. No. 864,628
Int. Cl. B60t *8/02*
U.S. Cl. 303—21 F **4 Claims**



In a skid control system for a brake system, a master cylinder actuates a pneumatic booster valve which controls a power booster. A hydraulic skid control valve is connected between the master cylinder and the power booster. A pneumatic skid control valve is connected between the pneumatic booster valve and the power booster. A control module actuable upon the occurrence of a skid condition to control the hydraulic and pneumatic skid control valves. Actuation of the hydraulic skid control valve cuts off communication between the master cylinder and power booster and connects the power booster to a reservoir. Actuation of the pneumatic skid control valve deactuates the power booster to release the brakes. When the skid signal is terminated a timeout circuit delays the return of the hydraulic skid control valve to its original position. This enables the power booster to be reactuated and to draw fluid from the reservoir.

3,627,387

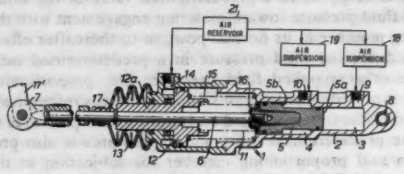
AIR PRESSURE-OPERATED BRAKING SYSTEMS

Wilbur Mills Page, and Alan Weeden Green, both of Lincoln, England, assignors to Clayton Dewandre Company Limited, Lincoln, England

Filed Sept. 12, 1969, Ser. No. 857,325
Claims priority, application Great Britain, Oct. 11, 1968, 48,316/68
Int. Cl. B60t *8/18*
U.S. Cl. 303—22 A **2 Claims**

In a vehicle-braking system which includes an apportioning valve actuated in accordance with vehicle load as determined

by pressures in the vehicle's air suspension system, said valve is controlled by a device comprising a control piston responsive to pressure in said suspension system and a further



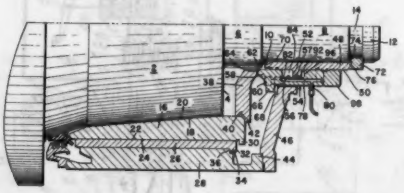
piston responsive to reservoir pressure and which overrides the control piston to set the apportioning valve to the "fully-laden" position if reservoir pressure falls below a predetermined value.

3,627,388

HYDRAULIC LOCKING AND LOOSENING DEVICE FOR BEARING

Lewis C. Jennings, Worcester; Robert W. Tappin, Boylston, and Samuel S. Rickley, West Boylston, all of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Filed Sept. 8, 1970, Ser. No. 70,445
Int. Cl. F16c *17/02*
U.S. Cl. 308—37 **7 Claims**



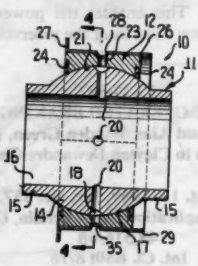
In the art of rolling metals, dual hydraulically actuated mechanism which is an integral part of a bearing structure for forcing the bearing tightly on the neck of a roll, positively maintaining the bearing in position during the rolling operation, and subsequently utilizing the same dual hydraulically actuated mechanism which is also integral with the bearing for removing the bearing from the roll neck.

3,627,389

SELF-ALIGNING BEARING ASSEMBLY

Philip H. Foote, Jr., Los Angeles, Calif., and Earl M. Curtis, Torrington, Conn., assignors to The Torrington Company, Torrington, Conn.

Filed Aug. 12, 1969, Ser. No. 849,806
Int. Cl. F16c *23/04*
U.S. Cl. 308—72 **7 Claims**



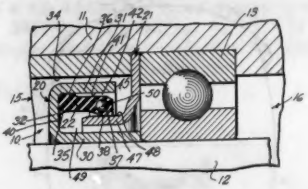
This disclosure relates to a self-aligning bearing assembly which includes an inner race member having a part spherical outer surface, and an outer race member having a part spherical inner surface cooperable with the inner race member surface, the outer race member being split in an axial direction so as to facilitate the assembly of the inner race member within the outer race member. A sheet metal cylinder is placed around the assembled inner race member and outer race member to retain the outer race member against separation with this same cylinder being utilized to fixedly secure the bearing assembly within a housing.

3,627,390

STATIC SEAL

Arthur S. Irwin, Jamestown, N.Y., assignor to TRW Inc., Cleveland, Ohio

Filed Oct. 2, 1969, Ser. No. 863,041
Int. Cl. F16j *15/16*; F16r *41/00*
U.S. Cl. 308—187.1 **2 Claims**



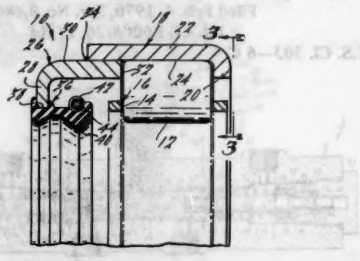
A static shaft seal for sealing pressure along the axis of a shaft in the absence of shaft rotation. The seal comprises three members, the first of which is a substantially U-shaped cross section ring press-fitted onto the shaft along the inner diameter of the inner leg with the outer leg spaced radially outwardly from the shaft. A second member is carried by the housing and has an annular wall extending between the legs of the U-shaped member. An elastomeric lip seal is bonded to the U-shaped member adjacent the intersection of the bight and outer leg and has a ring portion projecting axially with an outer diameter spaced from the inner diameter of the outer leg. The ring portion terminates in an increased mass portion having a sealing lip around the inner diameter thereof in static contact with the outer diameter of the second member. As the shaft rotates a centrifugal force acting on the increased mass portion causes the sealing lip to lift off of the outer diameter face of the second member.

3,627,391

COMPOSITE REAR WHEEL BEARING WITH INTEGRAL SEAL

Gerald L. Bingle, St. Clair Shores, Mich., assignor to Federal-Mogul Corporation, Detroit, Mich.

Filed Apr. 1, 1969, Ser. No. 812,141
Int. Cl. F16c *33/78*
U.S. Cl. 308—187.2 **9 Claims**

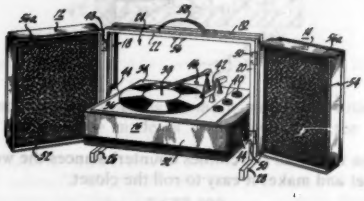


A roller bearing having a composite or multiple piece outer race with one of the pieces of the race having a seal integral therewith.

3,627,392
STEREOPHONIC SOUND-REPRODUCING APPARATUS

Finley Ruppersburg, Indianapolis, Ind., assignor to RCA Corporation

Filed Dec. 29, 1965, Ser. No. 517,380
Int. Cl. A47b 81/06
U.S. Cl. 312—8 11 Claims



1. A portable carrying case for sound-reproducing apparatus comprising:

a normally upright frame having a pair of spaced side members defining an opening therebetween;

tray means for receiving a record reproducing mechanism mounted between said side members for movement between a substantially horizontal operating position and a substantially vertical storage position, said tray means in its storage position providing a closed back covering the frame opening defined by said vertical side members;

a pair of enclosures for housing loudspeaker apparatus; and

means for mounting said enclosures on said side members for movement between an operating position wherein said enclosures face forwardly of said sound-reproducing apparatus in flanking relation to said tray means, and a storage position wherein said enclosures close toward one another to overlay the record reproducing mechanism in said tray means, said enclosures in the storage position providing a front covering of the opening defined by said frame side member,

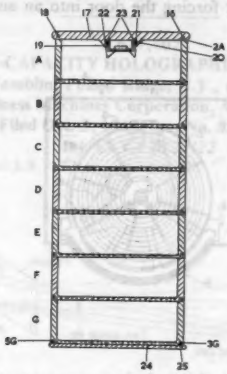
whereby in the storage position of said apparatus, the bottom surface of said tray means and the rear surfaces of said loudspeaker enclosures cooperate to enclose said record-reproducing mechanism, and in the operating position of said apparatus the record-reproducing mechanism is exposed to facilitate easy record loading and operation.

3,627,393
CONTAINERS

Paul Laurence Durham Hickson, Welwyn Garden City, and David Alexander Lindsay Seller, Chorley Wood, both of England, assignors to Imperial Chemical Industries Limited, London and The Flour Milling and Baking Research Association, Chorley Wood, England

Filed Mar. 30, 1970, Ser. No. 23,778
Claims priority, application Great Britain, Apr. 1, 1969, 17,033/69
Int. Cl. A24f 25/00
U.S. Cl. 312—31.1 10 Claims

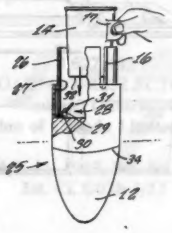
A container for perishable foodstuffs, e.g. bread, confectionery, meat and meat products, fruit and vegetables, has upstanding sidewalls and a perforated base section, means being provided at the top and bottom of the sidewalls whereby a number of containers can nest one within the other, a gasket being provided around either the top or bottom of the sidewalls to provide sealing between two adjacent containers. By placing solid carbon dioxide into the top of a stack of these containers, or introducing some other preserving atmosphere into the stack, the shelf life of foodstuffs can be increased.



3,627,394
CUP HOLDER

Constance M. Benn, and William J. Benn, both of 83-10 35th Ave., Jackson Heights, N.Y.

Filed Nov. 25, 1968, Ser. No. 778,650
Int. Cl. A47f 1/00, 3/02
U.S. Cl. 312—43 3 Claims



A holder for supporting a cup or drinking glass at a beach, so to eliminate the necessity of placing it upon the sand. The holder comprises a tapered lower end for insertion into the sand so that it may be maintained upright and an upper end having a receptacle into which a cup may be removably placed. The holder may be hollow and in screwed-together pieces, so as to provide a compartment for the storage of cups.

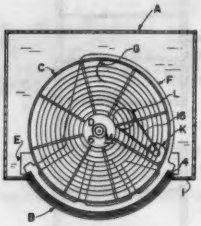
3,627,395
DOOR OPENING AND CLOSING MECHANISM FOR A REFRIGERATOR HAVING REVOLVING SHELVES

Earl Hoey, 31763 Shadyspring Road, San Francisco, Calif.

Filed Mar. 9, 1970, Ser. No. 17,381
Int. Cl. A47f 3/10
U.S. Cl. 312—125 10 Claims

A door opening and closing mechanism for a refrigerator having revolving shelves in which a single motor is used for revolving the shelves and novel means is provided for disconnecting the shelf rotating means from the motor and for connecting it to door opening and closing means when it is desired to gain access to the interior of the refrigerator. The

shelving may be manually rotated when the door is open to permit one or more items on the shelves to be removed and/or other items added. The novel means also includes auxiliary means for forcing the door into an airtight closing



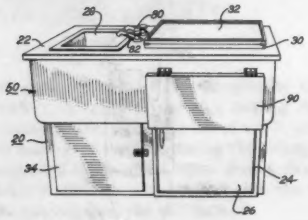
position at the end of the closing movement of the door to keep the refrigerator door hermetically sealed. The closing of the door will automatically connect the shelf-rotating means to the motor for again causing the shelves to rotate.

3,627,396

CABINET FOR CAMPER VEHICLES

Lester D. Miller, Topeka, Ind., assignor to Bangor Punta Operations, Inc., New York, N.Y.

Filed Apr. 20, 1970, Ser. No. 29,903
Int. Cl. A47b *51/00;* **F24c** *15/00*
U.S. Cl. 312—229 **13 Claims**



A fold-down cabinet for campers in which a counter assembly having a sink and stove is mounted on a base for movement between raised and lowered positions. The mechanism for raising and lowering the counter assembly consists of a plurality of levers connected to the counter assembly and to the base, permitting the base to swing outwardly, forwardly, upwardly and rearwardly as the counter assembly is moved from its lowered to its raised position. A drain fixture having a vent is connected to the sink, and the fixture has a plurality of holes for receiving the drain and vent outlet when the counter assembly is in its lowered and raised positions.

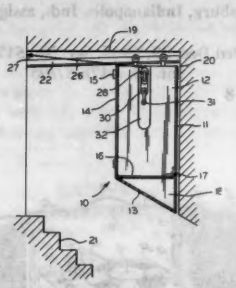
3,627,397

STORAGE DEVICES

Henry F. Rominsky, 6333 W. Cold Springs Road, Greenfield, Wis.

Filed June 17, 1970, Ser. No. 46,892
Int. Cl. H01r *39/40*
U.S. Cl. 312—246 **7 Claims**

A transportable closet rolls on rails mounted near the ceiling line of a closet. A cable, block, and tackle arrangement is included in the closet to raise and lower the cargo of clothes therein as the closet is moved into and out of dead storage.



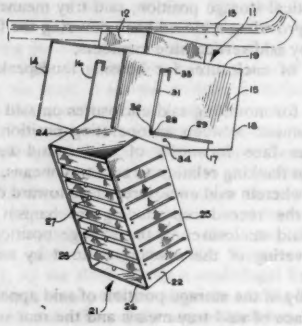
Thus, the weight of the clothes counterbalances the weight of the closet and makes it easy to roll the closet.

3,627,398

APPARATUS FOR STORAGE OF OBJECTS SUCH AS TAPE CASSETTES ENABLING EASY REMOVAL THEREOF

Laurence E. Reese, 4926 W. 134th St., Hawthorne, Calif.

Filed Oct. 9, 1969, Ser. No. 865,121
Int. Cl. A47b *67/02;* **A47f** *5/08;* **B65d** *5/50*
U.S. Cl. 312—246 **1 Claim**



Disclosed is a storage apparatus adapted for easy mounting in a position for use such as under the dashboard of an automobile. The storage apparatus includes a support or housing member adapted for mounting as above indicated and disposed therewithin is an object-containing member in the form of an open top box which is slidable from a closed position in the housing (for temporary storage) to an open and secured position with the open side of the box exposed so the contents retained therein may be readily removed therefrom. The contents in the box are stored in enclosures which are slidably mounted within the box and may be individually partially removed therefrom.

3,627,399

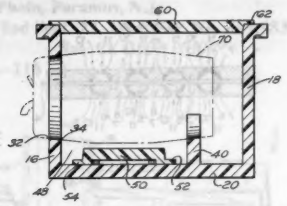
PORTABLE COOLER AND SUPPORT FOR A PRESSURIZED KEG

Eugene B. Addison, Lake Side Drive, Box 38, Hope Valley, R.I., and Earl R. Pitcher, Moonstone Beach, R.F.D. 1, Wakefield, R.I.

Filed Oct. 6, 1969, Ser. No. 863,934
Int. Cl. A47b *81/00*
U.S. Cl. 312—351 **2 Claims**

A portable cooler of lightweight material having an opening in one end through which a beer container, such as a

pressurized keg complete with its own tapping system may extend. The opening is sloped such that the keg when introduced into the opening forms a watertight fitting. The cooler unit may be made of a minimum of three molded pieces.

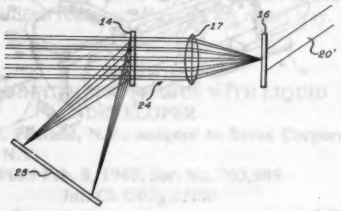


3,627,400

ADDRESSING HOLOGRAPHIC APPARATUS FOR USE WITH SPACE DIVISION MULTIPLEXED HOLOGRAMS

Henry John Caulfield, Carlisle, Mass., assignor to Sperry Rand Corporation

Filed Oct. 9, 1970, Ser. No. 79,578
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **4 Claims**



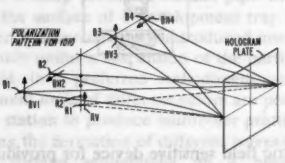
Holographic apparatus for addressing a space division multiplexed holographic storage medium having a plurality of holograms mutually interspersed and distributed over a given area, each hologram being recorded with a distinct sampling mask of a set of spatially complementary masks which are also used to construct the addressing holograms. Each addressing hologram is spatially distinct so as to be able to function individually in holographic reconstruction apparatus to direct substantially all the light in the reconstructing reference beam onto the discrete regions occupied by the particular multiplexed hologram recorded with the same mask as the operative addressing hologram.

3,627,401

BINARY-CODED HOLOGRAM RECORDING SYSTEM

Joseph P. Kirk, Endwell, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 24, 1969, Ser. No. 801,520
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **1 Claim**



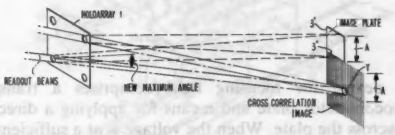
The invention relates to an information storage system in which the basic storage element is a hologram. Information is recorded (or written) by selectively orienting the plane of polarization of either the reference beam or the information beam as the two beams converge upon the hologram.

3,627,402

HIGH-CAPACITY HOLOGRAPHIC MEMORY

Rodger L. Gamblin, Pound Ridge, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 3, 1969, Ser. No. 863,479
Int. Cl. G02b *27/22*
U.S. Cl. 350—3.5 **5 Claims**



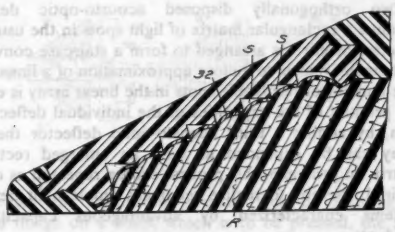
System capacity in a holographic memory is maximized by a reduction in spatial frequencies by reducing the angle of incidence of the reference and object beams during construction and eliminating the effects of the cross correlation image by minimizing the angle of incidence of the readout beam relative to different holograms in the holoarray, this being achieved by bringing all readout beams to an area of convergence spaced from the system optical axis and the readout-detecting means. To obtain maximum capacity for a given geometrical arrangement between the holoarray and the diode readout array, parameters such as number of holograms per holoarray, size and number of readout diodes in the diode array, can be maximized in order to be within the capabilities of the film resolution on which the holograms are constructed.

3,627,403

ROADWAY REFLECTORS

Peter Hedgewick, Windsor, Ontario, Canada, assignor to Reflex Corporation of Canada Limited, Amberstburg, Ontario, Canada

Filed Sept. 11, 1969, Ser. No. 856,957
Int. Cl. G02b *5/12*
U.S. Cl. 350—103 **3 Claims**



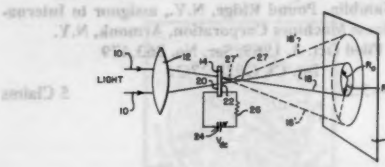
A roadway reflector comprising an integral hollow housing of plastic material including a base portion and a wall extending upwardly and inwardly and having a portion of transparent plastic material with a smooth outer surface and inner surfaces formed with retroreflective prisms. A layer of this plastic film is adhered to the periphery of the portion of the wall containing the prisms and a resin fills the housing, an air space thereby being provided between the film and the surfaces of the prisms.

3,627,404

ELECTRICAL FOCUSING DEVICE

Wen-Chung Wang, 25 Trescott Path, Northport, N.Y.

Filed Mar. 3, 1969, Ser. No. 803,623
Int. Cl. G02f 1/28
U.S. Cl. 350—160 **5 Claims**



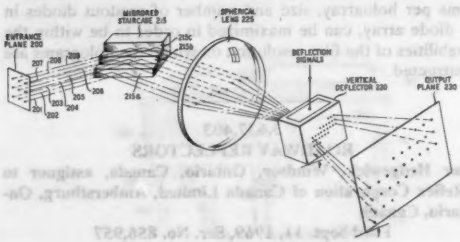
A device for focusing light comprises a transparent photoconductor plate and means for applying a direct voltage across the plate. When the voltage is at a sufficient level, the focal point relative to the plate can be changed.

3,627,405

ACOUSTO-OPTIC LIGHT DEFLECTION

Martin Feldman, Springfield, and Jack Page Griffin, Short Hills, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 22, 1970, Ser. No. 39,583
Int. Cl. G02b 5/08
U.S. Cl. 350—161 **3 Claims**



Two orthogonally disposed acousto-optic deflectors produce a rectangular matrix of light spots in the usual way. A series of mirrors arranged to form a staircase convert the rectangular matrix to a close approximation of a linear array. The number of resolvable spots in the linear array is equal to the product of the capacities of the individual deflectors. In turn, by adding a third acousto-optic deflector the linear array can be expanded to form an enlarged rectangular matrix. In principle, this process can be repeated as often as desired, thereby to realize relatively simple light deflection systems characterized by advantageous capacity-speed products.

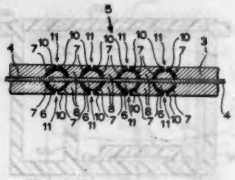
3,627,406

SPECTACLE FRAME WITH FLEXIBLE SIDEBARS

Oreste Blumenthal, Corso Montevecchio n., 36 Turin, Italy

Filed Jan. 28, 1970, Ser. No. 6,518
Claims priority, application Italy, May 28, 1969, 52012-A/69
Int. Cl. G02c 5/16
U.S. Cl. 351—114 **3 Claims**

A spectacle frame with flexible sidebars is provided by inserting a series of elements in the sidebars which are alternately convexly and concavely cylindrical, with a flexible member transecting and interconnecting them. Part cylindrical shells are interposed between each two adjacent elements.

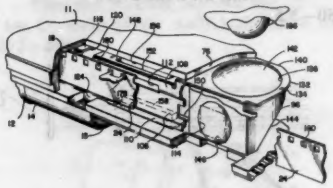


3,627,407

MOTION PICTURE FILM PRESSURE PLATE ASSEMBLY

Gerald H. Cook, Lynnfield, and Rogers B. Downey, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed July 3, 1969, Ser. No. 838,822
Int. Cl. G03b 1/48
U.S. Cl. 352—221 **11 Claims**



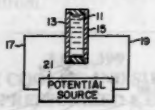
An assembly formed of an integral piece of sheet metal comprising an elongated pressure plate, a leaf-type spring, a bracket for mounting a light-reflecting element in operative relationship to an aperture provided in the pressure plate and an arrangement for reflecting extraneous light rays in a direction away from the light-reflecting element. In a preferred embodiment, this assembly is incorporated into a unique motion-picture-film-handling cassette adapted to be first mounted in a camera to facilitate exposure operations and then in a processor-projector unit to facilitate film-processing and projection operations.

3,627,408

ELECTRIC FIELD DEVICE

James L. Fergason, Verona, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 29, 1965, Ser. No. 467,852
Int. Cl. G02f 1/16
U.S. Cl. 353—84 **20 Claims**



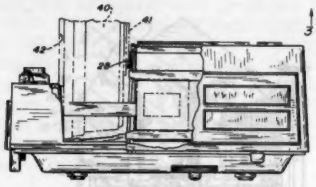
An electric field sensitive device for providing a visual indication in response to an electric field incorporating liquid crystalline materials of the type exhibiting the cholesteric phase.

3,627,409

SLIDE TRAY SUPPORTING MEANS

Israel Nesson, Fair Lawn, N.J., assignor to Keystone Division of Berkey Photo, Paramus, N.J.

Filed Sept. 22, 1969, Ser. No. 859,983
Int. Cl. G03b *23/04*
U.S. Cl. 353—116 6 Claims



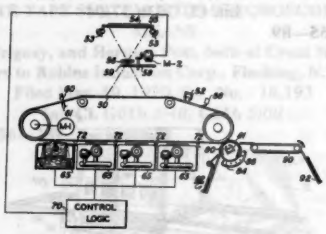
A slide projector for holding a rotary tray in a vertical condition in a troughway is also adapted to hold rectangular trays in the same troughway. The advancing mechanism is adapted to sequentially move either type tray while providing for the ready removal of the vertical or rectangular tray from the troughway. The rotary tray is provided with extending hub portions sized to seat in open top cup supports provided in the projector housing. These cup supports act as both vertical and horizontal retaining means for the rotary tray.

3,627,410

REPRODUCTION APPRATUS WITH LIQUID DEVELOPER

Don B. Jugle, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Feb. 8, 1968, Ser. No. 703,985
Int. Cl. G03g *15/00*
U.S. Cl. 355—4 5 Claims



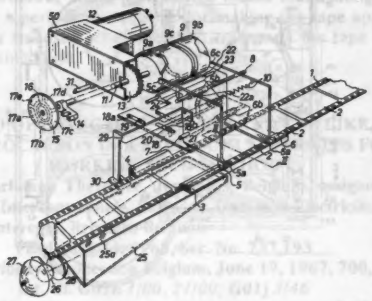
Apparatus for developing latent electrostatic images with a liquid developer by forming a wave to contact the image with sufficient turbulence, such that developer particles are suspended uniformly, but gentle enough so as not to destroy the electrical characteristics of the image thereby rendering a high quality print. The wave is formed by pumping liquid developer from a sump pit into a header pipe which is immersed below the surface of a development tray filled with liquid developer. Pressurized gas is introduced into the sump means to maintain uniform suspension of the particles in the developer liquid. In a preferred embodiment, an array of liquid development units of different colors are positioned at a development station to produce multicolor prints by selectively controlling the formation of different waves to contact latent images formed sequentially on a photoreceptor member advanced past the developing units. The liquid developed images are then transferred onto a support sheet in superposed relationship.

3,627,411

PHOTOGRAPHIC PRINTING APPARATUS

Erich Nagel, Anzing, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 23, 1969, Ser. No. 793,459
Claims priority, application Germany, Jan. 31, 1968, P 16 22 168.4
Int. Cl. G03b *27/62*
U.S. Cl. 355—45 15 Claims



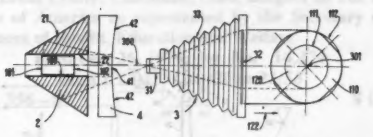
A photographic printing apparatus wherein the light-transmitting window at the printing station is defined by several masks which are movable with reference to each other to adjust the size of the window in dependency on the format of frames in the roll film which is being copied. The movements of masks are synchronized and one of the masks adjusts the reflector of a previewing device which permits visual inspection of one or more frames immediately ahead of the printing station.

3,627,412

APPARATUS FOR DECORATING PRESSED TINS

Lucien Jean, Meylan, France, assignor to Cebal GP, Paris, France

Filed July 7, 1969, Ser. No. 839,384
Claims priority, application France, July 12, 1968, 158928
Int. Cl. G03b *27/68*
U.S. Cl. 355—47 3 Claims

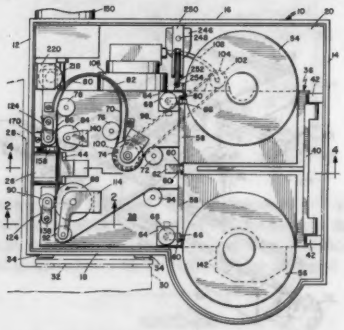


Apparatus for decorating pressed tins by printing a distorted image on a blank which is to be pressed, the apparatus comprising an anamorphic device and a photographic apparatus in which the anamorphic device comprises a truncated cone of transparent material having a perforation along an internal wall in the form a cylinder, the cross section of which is geometrically similar to the cross section of the tin which is to be formed, and the external wall of which is in the form of a truncated cone, the two bases of which are similar to the section of the internal cylinder and a correcting lens the contour of the correcting lens is geometrically similar to the cross section of the finished tin and provides distortions which are determined graphically from an experimental tin.

3,627,413
MICROFICHE FILM TRANSPORT UNIT

George E. Bushey, and Willard D. Isbell, both of San Diego, Calif., assignors to Cubic Corporation, San Diego, Calif.

Filed Oct. 14, 1970, Ser. No. 80,551
Int. Cl. G03b 27/46
U.S. Cl. 355—53 17 Claims

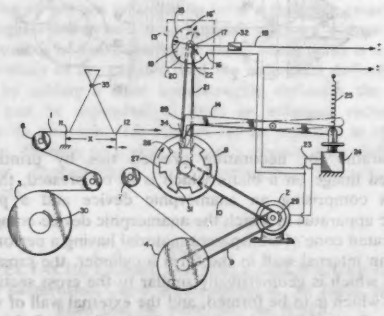


A microfiche film transport unit for use with a sequential recording camera having stationary optics. Supply and takeup magazines are mounted on a carriage or platform, which also carries film advance mechanism for moving film linearly over a platen at the lens position. The carriage is hinged and is itself moved to pass the film laterally across the lens position. A precision stepping motor drives the carriage to move the film in precise frame increments in a column across the width of the film and a fast return mechanism returns the film to the beginning of the column. Another stepping motor advances the film at the completion of each column. The drive mechanism is readily adaptable to variable format and frame programming control from a conventional microfiche camera, and the unit will handle the two most common widths of microfiche film with minor adjustments in the mechanism.

3,627,414
PHOTOCOPY METER

Stanley F. Staples, 4110 Wheeler Ave., Alexandria, Va.

Filed June 4, 1969, Ser. No. 830,303
Int. Cl. G03b 1/14, 1/32, 1/40
U.S. Cl. 355—64 3 Claims

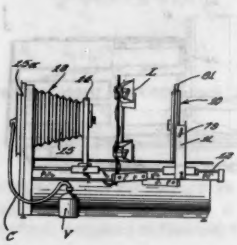


A system to meter strip advances in photocopying apparatus is described in which the strip and a metering roll travelling together precisely are stopped intermittently by cogs fixed to the roll coming to abut a stop element at intervals proportioned to predetermined advances of the strip.

3,627,415
COPYBOARD HAVING AUTOMATIC LATCH RELEASING MEANS

Gerhard A. Nothmann, Wilmette, Ill., assignor to Robertson Photo-Mechanix, Inc., Des Plaines, Ill.

Filed Dec. 5, 1969, Ser. No. 882,460
Int. Cl. G03b 27/62
U.S. Cl. 355—75 12 Claims

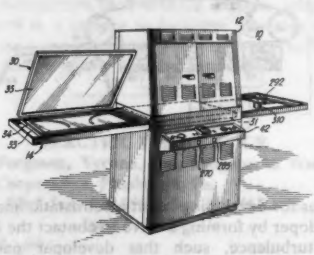


In graphic arts camera apparatus, a copyboard mounted on a frame for tiltable movement and having a cover section hinged to a base section and releasable latch for fastening the sections together is characterized by a latch actuator for automatically releasing the latch to permit separation of the hinged sections whenever the copyboard tilts from a vertical exposing position to a horizontal loading and unloading position. A catch mechanism prevents inadvertent release of the latch when the copyboard is vertically disposed, and the latch is biased toward a latched position to facilitate fastening the sections subsequent to loading the copyboard.

3,627,416
TWIN-EXPOSING MACHINE

Harold R. Benson, Lombard, Ill., assignor to The Nurac Company, Chicago, Ill.

Filed Oct. 2, 1969, Ser. No. 864,293
Int. Cl. G03b 27/04
U.S. Cl. 355—89 7 Claims

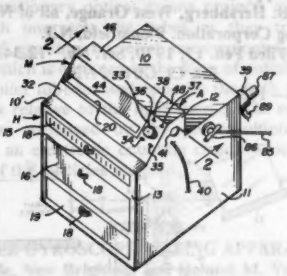


A twin-exposure machine for use in chemical milling, printed circuit work, photographic plates and the like. The twin-exposing machine includes a cabinet containing one or more light sources. A generally horizontally extending track extends through opposite ends of the cabinet and a pair of printing frames is each mounted for travel on the track between a first exposing position within the cabinet and a second position out of the cabinet. Thus one frame may be loaded while the other is being exposed. The frame that is ready for exposure is pushed in manually and a circuit is closed which readies the exposure lights. Upon completion of the exposure, the frame is retracted automatically from the exposure position.

3,627,417
REPRODUCTION APPARATUS

Ira L. Watson, 1330 North Franklin St., Colorado Springs, Colo., and Dennis Martinez, 6040 East 74th Pl., Commerce City, Colo.

Filed July 24, 1969, Ser. No. 844,522
Int. Cl. G03b *27/30*
U.S. Cl. 355—100 **6 Claims**

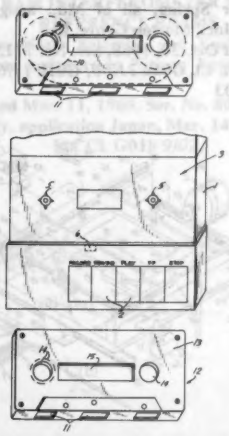


The apparatus is particularly adapted to reproduce, on relatively large and stiff illustration board, the lines of a drawing or the like which is to be illustrated by an artist to produce a so-called "wash" drawing or an airbrush or pencil or ink rendering. One side of the board is coated with a layer of heat and/or light-sensitive material, without bending the board, by passage through a pair of rollers, the lower of which is immersed in a coating solution and the upper of which is spring-pressed downwardly. The coating device is installed in an auxiliary housing atop a main housing, in the latter of which is a chamber containing heat lamps and an additional chamber to which a developer gas, such as ammonia, is supplied. A blower removed ammonia vapors from the developing chamber. The board is placed on a pad in a tray mounted on slides and provided with a glass cover, for moving the board into the heat chamber. Controls are placed on the auxiliary housing.

3,627,418
CASSETTE TAPE SYSTEM WITH STROBOSCOPIC TEST MEANS

Stephen Prigozy, and Herman Post, both of Great Neck, N.Y., assignors to Robins Industries Corp., Flushing, N.Y.

Filed Mar. 10, 1970, Ser. No. 18,193
Int. Cl. G01b *3/40;* **G11b** *5/00*
U.S. Cl. 356—23 **9 Claims**

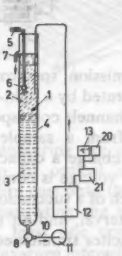


A cassette tape recorder and reproducer is adapted for use with tape cassettes with predetermined dimensions and configurations and has a rotatable tape transport shaft for transporting tape at a predetermined rate. Stroboscopic test means is provided for testing for deviations from the predetermined rate and has a cassette-casing means corresponding to the predetermined dimensions and configuration, a rotatable hub in the casing means engageable with the tape transport shaft, an observation window in the casing for observing at least a portion of the interior thereof, a stroboscopic tape trained in a close loop about the hub for advancement lengthwise of itself in response to rotation of the hub, guide means guiding the tape in a predetermined path past the window, and a light source means illuminating the tape with a periodicity requisite for making the tape appear to be at a standstill when the shaft transports the tape at a predetermined rate.

3,627,419
METHOD OF DETECTION, DOSAGE AND THE LIKE, OF A HYDROCARBON IN A FLUID AND APPARATUS FOR WORKING SUCH METHOD

Victor Carlomon Thevenier, Jemappes, Belgium, assignor to Societe-Intercommunale Belge de Gaz et d'Electricite, en abreg Intercom, Brussels, Belgium

Filed June 14, 1968, Ser. No. 737,193
Claims priority, application Belgium, June 19, 1967, 700,158
Int. Cl. G01n *1/00, 21/00;* **G01j** *3/46*
U.S. Cl. 356—36 **6 Claims**

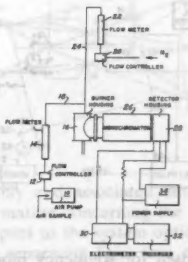


A method for detecting a hydrocarbon in a carrier liquid wherein a sample of the carrier liquid is diffused in a solvent for the hydrocarbon, and changes in the color of the solvent due to amounts of hydrocarbon dissolved therein are optically measured as an indication of the hydrocarbon on the carrier liquid.

3,627,420
METHOD OF DETECTING HALIDES BY FLAME CHEMILUMINESCENCE

Walter Leslie Crider, Cincinnati, Ohio, assignor to The United States of America as represented by the Secretary of Department of Health, Education and Welfare

Filed Feb. 26, 1970, Ser. No. 14,274
Int. Cl. G01j *3/30;* **G01n** *21/58*
U.S. Cl. 356—87 **8 Claims**



A method for detecting the presence of halides in gases is described whereby a halide-containing gas sample is con-

tacted with a hydrogen-oxygen flame and the spectral emission produced by the flame chemiluminescence of the halide is analyzed.

3,627,421

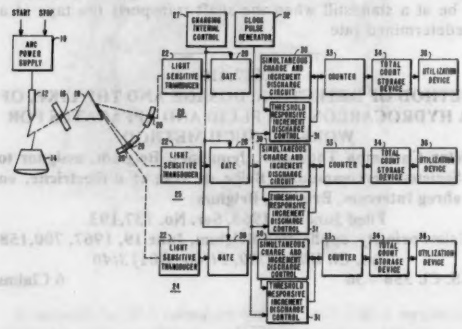
READOUT SYSTEM FOR ANALYTICAL EQUIPMENT

John Harley, 355 Brooklyn Road, and Johannes C. Deventer, 278 The Hillside, both of Pretoria, Republic of South Africa

Filed May 5, 1969, Ser. No. 821,740

Int. Cl. G01j *3/30, 3/28*

U.S. Cl. 356—98 **16 Claims**



A direct reading emission spectrometer is disclosed in which the current generated by a light-sensitive transducer in each of a plurality of channels corresponding to the different wavelengths of light from a sample to be quantitatively analyzed is applied to charge a capacitor during a charging interval. The capacitor voltage is compared with a threshold value at the start of each of a succession of sampling intervals within the charging interval, and an increment of charge is removed from the capacitor simultaneously with the charging thereof by the generated current during each of those sampling intervals at the start of which the capacitor voltage is determined to be at least equal to the threshold value. Each charge removal is digitally recorded to provide a continuous indication of the integral of current flowing into the capacitor.

3,627,422

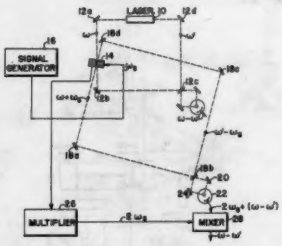
MEANS FOR AVOIDING LOCKING IN RING LASERS

Marvin Chodorow, Menlo Park, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed June 21, 1965, Ser. No. 465,685

Int. Cl. G01b *9/02;* **H01s** *3/10*

U.S. Cl. 356—106 **12 Claims**



Means are disclosed for frequency modulating opposing modes in a ring laser assembly whereby locking is minimized or eliminated. The use of three types of modulators comprising an acoustic generator, a light shutter and an electro-optic crystal are described. In each case, the modulators are driven in accordance with a time-varying signal provided by a signal generator.

3,627,423

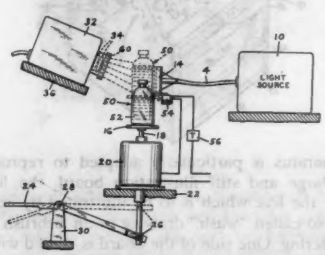
METHOD AND APPARATUS FOR DETECTING PARTICULAR MATTER IN SEALED LIQUIDS

Julius Z. Knapp, Somerset; Daniel J. Verin, Bloomfield, and Emanuel B. Hershberg, West Orange, all of N.J., assignors to Schering Corporation, Bloomfield, N.J.

Filed Feb. 17, 1970, Ser. No. 12,342

Int. Cl. G01n *21/24*

U.S. Cl. 356—103 **10 Claims**



A method and apparatus for detecting particulate contaminates in a liquid; the method comprising the steps of positioning the container containing the liquid to be inspected in light paths angularly disposed to a viewing axis and forming an illuminated area with a shadow zone at the viewing axis, rotating the container and the liquid therein in the illuminated area and viewing the liquid from the shadow zone; the apparatus comprising a platform for supporting a container to be inspected, means for rotating and stopping the platform, light sources for directing light at the container at an angle relative to a viewing axis to form an illuminated area through the container with a shadow zone at the viewing axis, a camera having an electrooptical transducer, said camera being mounted at said viewing axis, and means connected to the camera for optically viewing the transduced image.

3,627,424

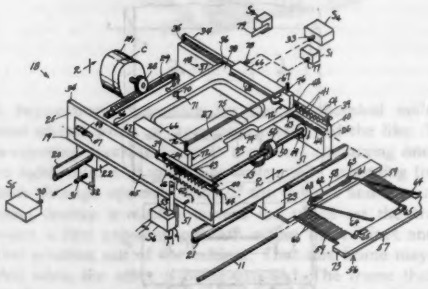
BACTERIA COUNTER

Horton E. Dorman; Charles Soodak, both of Silver Spring; Herbert M. Cullis, College Park; C. David Miller, Greenbelt; Rodolfo Ramiro Rodriguez, and Eric W. Youngquist, both of Silver Spring, all of Md., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Oct. 30, 1968, Ser. No. 771,911

Int. Cl. G01n *21/00;* **G01b** *11/00*

U.S. Cl. 356—103 **21 Claims**



An automated device for detecting measuring and counting growing microcolonies of bacteria by their light-scatter-

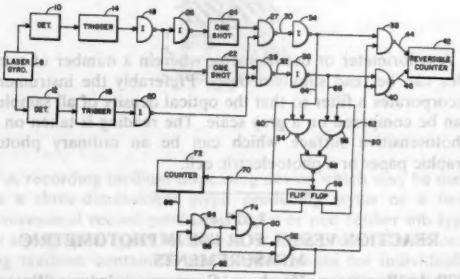
ing property. The growing bacteria are contained in glass capillary tubes filled with nutrient agar and are counted by passing the capillary tubes through a narrow beam of light. The tubes are mounted in a holder which is, in turn, detachably secured on a carriage. The carriage is translated in a direction lengthwise of the tubes and then sequentially moved transversely in a step equal to the distance between adjacent tubes. Transverse stepping takes place at the end of the longitudinal travel of each tube. A fixed light source and associated stationary optical means projects a narrow light beam which intersects the tubes as they translate. The presence of growing bacterial microcolonies causes light scattering which is detected in the form of pulses of light by a photomultiplier tube located opposite the path of translation of the tubes relative to the light source. The corresponding signal pulses produced by the photomultiplier tube are counted by an electronic counting circuit which provides a fast count of the particles scanned.

3,627,425

LASER GYROSCOPE BIASING APPARATUS

Barrett Doyle, New Brighton, and Helmut M. Volk, St. Paul, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 14, 1969, Ser. No. 824,549
Int. Cl. G01b *9/02, 9/10*
U.S. Cl. 356—106 **5 Claims**



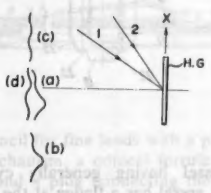
Electronic apparatus processes the output of a laser gyroscope which is operated with a large amplitude oscillatory bias, to obtain the output after an integer number of bias cycles.

3,627,426

HOLOGRAM INTERFEROMETER WITH TWO REFERENCE BEAMS

Tadao Tsuruta; Norio Shiotake, and Yoshinobu Ito, all of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 11, 1969, Ser. No. 806,236
Claims priority, application Japan, Mar. 14, 1968, 43/16219
Int. Cl. G01b *9/02,*
U.S. Cl. 356—109 **8 Claims**



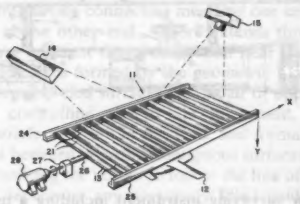
A method and apparatus are provided for obtaining interference fringes in a double exposure hologram interferometer using two collimated reference beams capable of restoring clear interference fringes on an object which undergoes lateral translation between the exposures, by a slight rotation of one of the image-reconstructing beams on the reconstruction process to one of the images exactly over the other. Polarization beam-splitting elements such as a Savart plate can be adopted to tilt the images and to give rise to fringe patterns favorable for the analysis of the changes in height of the object between the exposures. Retardation between the images is also provided by translation of the hologram.

3,627,427

METHOD AND APPARATUS FOR CONTOUR MEASUREMENT

Winston O. Johnson, Atlanta, and Donald M. Meadows, Marietta, both of Ga., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Feb. 11, 1970, Ser. No. 10,520
Int. Cl. G01b *11/24, 11/30*
U.S. Cl. 356—120 **17 Claims**



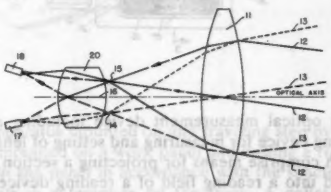
A technique for measuring the contour of a surface by generating a pattern of optical interference between a periodic shadow pattern cast onto the surface and a periodic reference pattern. Translating the shadow pattern and the reference pattern at least one complete cycle of spatial frequency causes the average intensity of the shadow pattern, the reference grid pattern, and various extraneous optical noise images to be minimized or cancelled, so that only contour lines accurately describing the contour of the surface remain on the surface to be viewed or photographed.

3,627,428

OPTICAL QUADRATURE

Truman G. Bergman, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed June 29, 1970, Ser. No. 50,515
Int. Cl. G01b *11/26*
U.S. Cl. 356—141 **6 Claims**



A lens assembly and associated detectors for providing directional information concerning the location of a source of light with respect to the system optical axis comprising a lens system for separating light rays entering therein into quadrants, a focusing lens for focusing light rays on the lens system and detectors positioned with respect to the lens

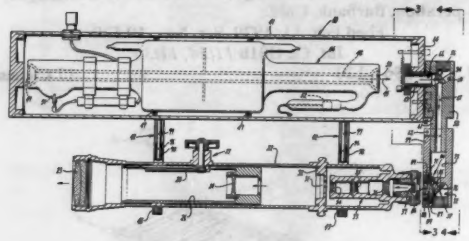
system such that the separated light rays impinge on the detectors and the outputs of the detectors provide directional information with respect to the system optical axis.

3,627,429

LASER OPTICAL SURVEYING INSTRUMENT AND METHOD

Richard A. Jaenicke, San Francisco, and Raymond A. Evanson, El Cerrito, both of Calif., assignors to Spectra-Physics, Inc.

Filed Aug. 14, 1968, Ser. No. 752,700
Int. Cl. G01b *11/27*
U.S. Cl. 356—153 **9 Claims**



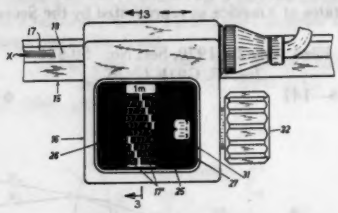
A laser surveying instrument including a telescope and a laser head coupled together with movable optics for directing the output beam from the laser head into the eyepiece and through the telescope after routine sighting.

3,627,430

OPTICAL MEASURING DEVICE

Walter Miller, Traunstein, Germany, assignor to Dr. Johannes Heidenhain, Traunreut nr. Traunstein, Germany

Filed June 2, 1969, Ser. No. 829,182
Claims priority, application Germany, May 30, 1968, P 17 73 529.4
Int. Cl. G01b *11/04*; G02b *27/02*
U.S. Cl. 356—170 **5 Claims**



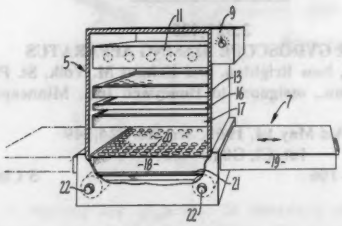
An optical measurement device including a scale and a reading device for measuring and setting of lengths or angles, which comprise means for projecting a section of a scale enlarged into a reading field of a reading device. The scale is formed in its total range to be read in the manner of a transverse measuring field including FIGS. The FIGS. have straight-lined limiting margins and are dark at least at their edges, and are set off relative to each other. Each of the FIGS. of the transverse measuring field provided on the scale is numbered, for a numerical indication of the measuring values. A fork is disposed in the reading field of the device for the symmetry equalization and has limit edges disposed parallel to the straight-lined FIGS. of the transverse measuring field, and passes through within the range of the figure images disposed in or crosswise to the direction of displacement of said fork. A numbered figure image of the transverse measuring field is caught by the fork, and means are provided for measurably displacing the fork for division of the intervals of the transverse measuring field.

3,627,431

DENSITOMETER

John Victor Komarniski, 2167 Burr Ct., Santa Cruz, Calif.

Filed Dec. 22, 1969, Ser. No. 887,122
Int. Cl. G01j *3/46, 3/50*
U.S. Cl. 356—180 **1 Claim**



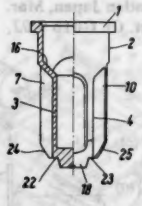
A colorimeter or densitometer wherein a number of samples can be read simultaneously. Preferably the instrument incorporates a filter so that the optical density of all samples can be compared on a gray scale. The reading is taken on a photosensitive surface which can be an ordinary photographic paper or a photoelectric cell.

3,627,432

REACTION VESSEL FOR USE IN PHOTOMETRIC MEASUREMENTS

Wilhelm Bergmann, Hamburg, Germany, assignor to Eppendorf Geraetebau Netheler & Hinz GmbH, Hamburg, Germany

Filed Apr. 29, 1969, Ser. No. 820,231
Claims priority, application Germany, May 2, 1968, P 17 73 333.4
Int. Cl. G01n *1/10*
U.S. Cl. 356—246 **12 Claims**



A small vessel having generally cylindrical form is described. This vessel has a flange at the upper rim and the lower portion is provided with parallel planar surfaces particularly suitable for photometric measurement of the contents of the vessel.

3,627,433

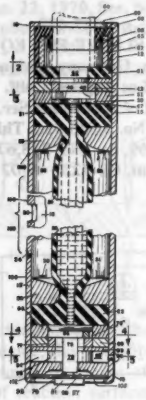
STYLUS WITH PRESSURIZED RECORDING MEDIUM SUPPLY MEANS AND MEANS FOR CONTROLLING THE DISPENSING OF RECORDING MEDIUM

Otto John Munz, Suite 602, Bldg. 1, Crystal Plaza, 2001 Jefferson Davis Hwy., Arlington, Va.

Continuation-in-part of application Ser. No. 562,134, Jan. 30, 1956, now Patent No. 3,405,213, dated Oct. 8, 1968. This application Sept. 24, 1968, Ser. No. 762,114

Int. Cl. B43k 27/10

U.S. Cl. 401—47 6 Claims



A recording medium dispensing device which may be used as a three-dimensional glyph producing stylus or a two-dimensional record producing stylus or pen (either nib type or stylographic type) having one or more pressurized recording medium containers and control means for individually controlling the dispensing of recording medium from the containers, and having separately controllable withdrawing means for withdrawing previously dispensed recording medium from the recording volume or surface.

3,627,434

MECHANICAL PENCIL FOR FINE LEADS

Yukio Horie, Tokyo, Japan, assignor to Dainihon Bungu, Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 10, 1969, Ser. No. 865,254

Claims priority, application Japan, May 14, 1969, 44/44484

Int. Cl. B43k 21/16

U.S. Cl. 401—65 3 Claims

A mechanical pencil for fine leads with a pushbutton-type lead advancing mechanism, a conical ferrule at the writing end of the barrel and a plug connecting the ferrule to the barrel. The plug is so arranged that it reaches deep into the ferrule, thereby rendering the writing end of the barrel more rigid and shortening the distance between the pencil tip and the clutch head which advances the lead.

3,627,435

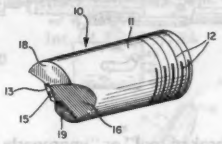
NOZZLE FOR SUPPLYING FILLER MATERIAL BETWEEN ADJACENT SURFACES

Raymond J. Hendershot, Pennsburg, Pa., assignor to American Olean Tile Company, Lansdale, Pa.

Filed Apr. 23, 1970, Ser. No. 31,094

Int. Cl. E04f 21/12

U.S. Cl. 401—265 4 Claims



A nozzle for supplying filler material to a void formed between adjacent surfaces is described which comprises a cylindrical barrel having connecting means at one end and an applicator tip at the other end. A bore extends through the barrel and has a constant diameter portion near the tip end thereof. The tip end is formed by the geometric intersection of essentially four beveled surfaces, i.e. a pair of opposed angular cheeks controlling side-to-side movement, vertical depth of the nozzle aperture in the void, and formation of a seal in the void between adjacent contiguous surfaces; a leading surface permitting the nozzle to follow the line of application and also depressing any previously filled voids of this same material which intersect at an angle; and a trailing surface adapted to permit the tip to strike the exposed surface of the filler material clean as the nozzle progresses.

3,627,436

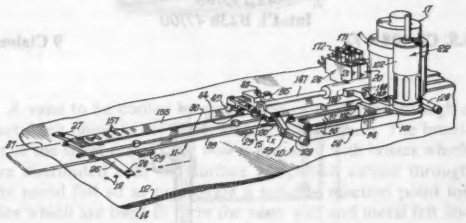
TOOL FEEDING APPARATUS

Ralph D. Adams, Glendora, and Rudolf Richard Schindler, Los Angeles, both of Calif., assignors to Omark-Winslow Aerospace Tool Co.

Filed Mar. 24, 1970, Ser. No. 24,045

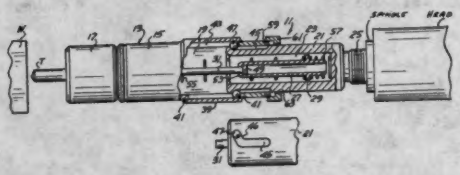
Int. Cl. B23b 41/00, 45/14, 39/26

U.S. Cl. 408—13 39 Claims



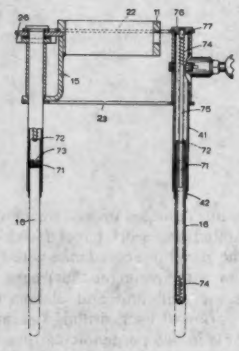
A drilling apparatus mounted on and traveling step by step along a track mounted on a work panel and drilling a row of spaced holes in the panel in accordance with the spacing of positioning slots in a template on the track. A collet-type clamp unit trails the drill unit and clamps the drill unit against the panel prior to each drilling operation, the drill unit being adjustable in two perpendicular planes so as to be normal to the surface to be drilled. Two latching mechanisms are fixed respectively to the drill unit and the clamp unit to locate these units along the track, and a reciprocating actuator steps first the drill unit and then the clamp unit to successive positions along the template.

3,627,437
TOOLHOLDER DETECTION SYSTEM
Theodore M. Smith, 14750 Puritan Ave., Detroit, Mich.
Filed Sept. 15, 1969, Ser. No. 858,012
Int. Cl. B23b 49/00
U.S. Cl. 408—16 4 Claims



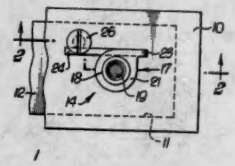
A "no tool," "broken tool" or "improperly set tool" detection device for use with taps, drills, reamers, boring tools, counter bores and milling cutters which include a toolholder having assembled first and second parts normally biased outwardly of each other with a radioactive element on one part and a shield upon the other part normally spaced from the radioactive element and in conjunction with a radiation detection system whereby upon relative longitudinal movement of the toolholder first and second parts, said shield will protectively enclose said radioactive element, said relative movement being prevented when there is "no tool," "broken tool" or an "improperly set tool," the means for assuring said relative longitudinal movement which includes first longitudinal slots on the tool first part and corresponding laterally displaced second slots on the tool second part with angular extensions of said second slots and with balls interposed respectively between said first slots and the extensions of said second slots, whereby rotative drive delivered to said second part effects a cam action between said balls and angular extension to effect a relative longitudinal movement between said first and second parts.

3,627,438
MACHINE TOOL GUARDS
Vernon Muslin, 16 Roxburgh Croft, New Cubbington, Leamington Spa, and Derrick Crossland, Western Road, Stratford-on-Avon, both of England
Filed Aug. 29, 1969, Ser. No. 854,077
Claims priority, application Great Britain, Aug. 29, 1968, 41,195/68
Int. Cl. B23b 47/00
U.S. Cl. 408—72 9 Claims



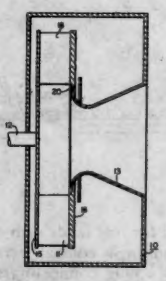
A machine tool guard to guard an operative or other persons from injury by moving parts of the machine tool includes a support arrangement adapted to be mounted on a part of a machine tool which is reciprocable with advance of the tool towards a workpiece, thereby providing a compact guard closely surrounding the tool. The guard incorporates a plurality of elongated guard members each extending from said support arrangement in the direction of advance of the machine tool to form a guard therefor, the elongated guard members each being mounted for independent reciprocation with respect to said support arrangement such that in operation they are at least partially retractable into and extensible from said support arrangement. As a result the individual guard members can be made sufficiently long to effectively guard the tool while at the same time they can be retracted to permit a desired extent of advance of the tool towards or into the workpiece.

3,627,439
DRILL JIG SLEEVE FOR EQUIPMENT
Peter Gnoth, Aldingen, Germany, assignor to American Drill Bushing Company, Los Angeles, Calif.
Continuation-in-part of application Ser. No. 722,396, Apr. 18, 1968, now Patent No. 3,535,956. This application Apr. 4, 1969, Ser. No. 813,674
Int. Cl. B23b 49/02
U.S. Cl. 408—241 9 Claims



A guide sleeve for a twist drill, the guide sleeve being held in a drill block against rotation and also against movement axially of the sleeve. The sleeve has a cylindrical exterior. A stamping of relatively flat stock has a hole in one end encircling and fastened to the sleeve at the entrance end, as for example by welding, soldering or metal glue. Additionally, a portion of the stamping engages the surface of the drill block to space the entrance end from the drill block and a threaded stud in the drill block has a position spaced a short distance from the sleeve and engages a radially extending end of the stamping to prevent rotation of the sleeve when the drill is injected into it.

3,627,440
CENTRIFUGAL FAN
Carl O. Wood, Needham Heights, Mass., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 7, 1970, Ser. No. 26,234
Int. Cl. F04d 17/08, 29/40
U.S. Cl. 415—53 2 Claims



An axial inlet for a centrifugal fan is provided with an inlet cone-shaped to converge at a distance in front of the inlet

opening of the wheel sideplate to a diameter less than the diameter of the wheel inlet opening and then reversely curved to terminate adjacent the edge of the wheel sideplate opening. A seal plate may extend from around the exterior of the reversely curved portion of the inlet cone in a manner to overlap the front of the wheel sideplate and an inside edge of the sideplate opening wall may be chamfered towards the interior of the wheel in the direction of the periphery of the wheel.

3,627,441

FLUID-OPERATED ESCAPEMENT MECHANISM

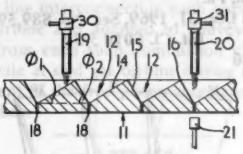
Colin John Kirk, Crowthorne, England, assignor to Martonair Limited, Twickenham, Middlesex, England

Filed Jan. 22, 1970, Ser. No. 4,893

Claims priority, application Great Britain, Feb. 19, 1969, 8,884/69

Int. Cl. F04d *23/00*

U.S. Cl. 415—148 **10 Claims**



A fluid-operated escapement mechanism, which can be used as a counting device, has a member which is moved in predetermined increments by means of jet nozzles. The jets impinge on groups of reaction surfaces, each group having two oppositely inclined reaction surfaces which are arranged so that the member normally moves in one direction in an intermittent manner. The mechanism can provide signals when the member reaches predetermined positions in its travel.

3,627,442

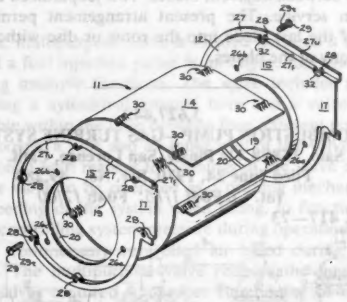
BLOWER HOUSING

Theodore C. Brandt, Whitehouse, Tex., assignor to General Electric Company

Filed May 14, 1970, Ser. No. 37,226

Int. Cl. F04d *29/40, 25/06, 17/08*

U.S. Cl. 415—219 **14 Claims**



Improved means is provided for housing a blower, fan, or the like. Basically, the improved housing means comprises end wall means, scroll means having a first dimension extensible along a first line transverse to the end wall means and a second dimension extensible along a second line generally parallel to the end wall means, and readily removable fastener means for quickly connecting and disconnecting the end wall and scroll means to and from one another. With this arrangement, a fluid inlet opening for the blower can be provided in the end wall means which is smaller than the portion of the blower contained within the housing means, but the blower portion can be easily extracted from within the housing means by removing the fastener means.

3,627,443

TURBINE BLADE

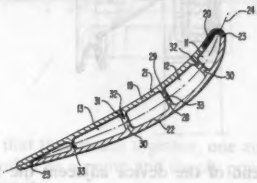
Ludwig Pirzer, Vorst Bezirk/Dusseldorf, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Sept. 3, 1969, Ser. No. 854,987

Claims priority, application Germany, Sept. 4, 1968, P 17 76 015.5

Int. Cl. F01d *5/18*

U.S. Cl. 416—90 **10 Claims**



A turbine blade with convection-cooling or screen-cooling which is capable of manufacture in small sizes and consists of two hollow blade halves provided with axial internal ribs, of which at least one rib of one hollow blade half extends beyond the profile center plane into the other hollow blade half and is connected thereat with a corresponding rib extension.

3,627,444

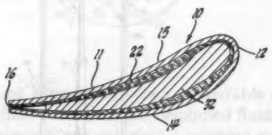
WICK LINED VANES AND THEIR MANUFACTURE

Jerome V. Lentz, Plainfield, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 24, 1969, Ser. No. 879,109

Int. Cl. F01d *5/08*

U.S. Cl. 416—96 **11 Claims**



A vane to be cooled by circulation of a coolant through a metal felt lining in the vane, and its manufacture. The interior of the sheet metal vane wall is provided with bosses which are distributed over the surface and which extend through the metal felt so as to provide a suitable reaction point for dies which are used to form the vane wall and metal felt lining into airfoil form.

3,627,445

VENTILATING DEVICE FOR COOLING A HEAT ENGINE

Francois Andriussi, and Pierre Rouques, both of Grenoble, France, assignors to S.E.R.M.A.G. Societe d'Etudes et de Recherches Magnetiques, St. Martin d'Heres, France

Filed Apr. 14, 1969, Ser. No. 815,975

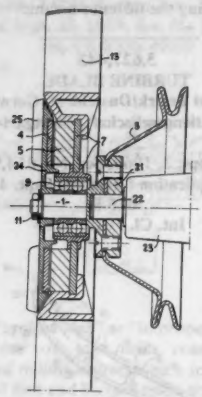
Claims priority, application France, Apr. 17, 1968, 148308

Int. Cl. F04d *25/14;* **H02k** *49/00*

U.S. Cl. 416—170 **3 Claims**

Ventilating device for a heat engine comprising a fan and a driving shaft connected to the fan by a coupling constituting a hysteresis drive coupling designed to slip beyond a given

maximum transmissible torque. The part of the device which constitutes the armature and must dissipate the heat is



located at the end of the device adjacent the fan, so as to face the stream of air created by the fan, whereby this part is cooled by this stream of air.

3,627,446

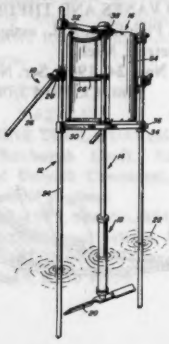
POND WATER AGITATOR

Jerry D. Wade, and Phillip H. Geisler, both of Galena, Kans., assignors to Wadler Manufacturing Company, Inc.

Filed May 1, 1970, Ser. No. 33,588

Int. Cl. B01f *7/24*

U.S. Cl. 416—171 **10 Claims**



A wind-operated agitator, circulates water in ponds to prevent surface freezing during winter months. Upward flow of warmer water from the bottom of the pond is induced by rotation of an impeller connected to the lower end of a vertical shaft to which a wind vane assembly is secured above the water. A protective tubular housing encases the lower section of the shaft submerged in the water.

3,627,447

RADIAL TURBINES

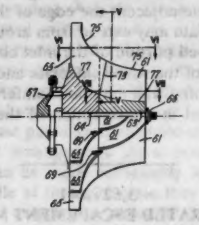
Ulo Okapuu, St. Lambert, Quebec, Canada, assignor to United Aircraft of Canada Limited, Longueuil, Quebec, Canada

Filed Mar. 17, 1969, Ser. No. 807,599

Int. Cl. F04d *29/26;* **F01d** *1/00*

U.S. Cl. 416—227 **7 Claims**

A rotor for a centripetal turbine having a rotatable hub, star blades extending radially from the hub and exducer blades extending substantially radially from the hub but curved away from the direction of rotation of the hub. A gap or channel is provided between the trailing edge of each star blade and the leading edge of each corresponding exducer blade to direct a jet of fluid over the convex surface of the



exducer blade to reenergize the boundary layer formed thereon during operation of the rotor.

3,627,448

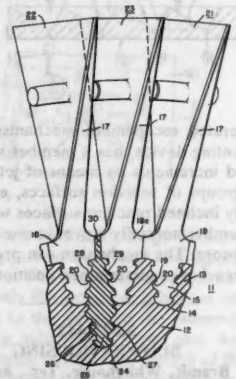
LOCKING ARRANGEMENT FOR SIDE-ENTRY BLADES

Donald R. Rupp, Media, and James A. Pratt, Springfield, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 31, 1969, Ser. No. 889,599

Int. Cl. F01d *5/32*

U.S. Cl. 416—220 **4 Claims**



An arrangement is provided for installing and subsequent locking of side-entry blades in a turbine rotor disc. Heretofore, the placement of the last blade in a circular row of turbine blades has required twisting, bending and distorting of the last and adjacent blade at assembly because of interference between adjacent blades. This jeopardized their reliability in service. The present arrangement permits radial entry of the last blade into the rotor or disc without distortion of any of the blades.

3,627,449

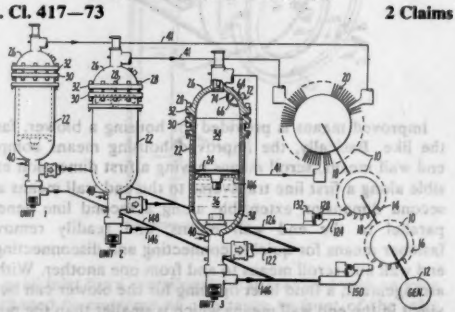
COMBUSTION PUMP—GAS TURBINE SYSTEM

Eric A. Salo, 15898 Via Pinale, San Lorenzo, Calif.

Filed June 24, 1970, Ser. No. 49,283

Int. Cl. F04f *1/16;* **F04b** *17/00*

U.S. Cl. 417—73 **2 Claims**



A combustion pump system for the high pressure pumping of liquids comprising a plurality of casings, a free piston

slidably disposed within each of said casings for reciprocal movement between an upper combustion chamber and a lower hydraulic chamber defined therein, a liquid input line connected to the hydraulic chamber of each casing, each free piston being adapted to be raised from its related hydraulic chamber toward its related combustion chamber by admission of liquid into said hydraulic chamber through the input line connected thereto, a liquid output line connected to each hydraulic chamber, means for each casing to introduce a fuel-air mixture into the combustion chamber of the casing and for igniting the same therein to drive the free piston downwardly and forcibly discharge liquid therebeneath from the hydraulic chamber through said output line, said liquid output lines being interconnected to form a single liquid discharge line, and control means adapted to sequentially integrate the reciprocal movement cycles of said free pistons to provide a substantially continuous liquid output from said discharge line;

turbine rotor means comprising a drive nozzle, said discharge line being in communication with said nozzle to thereby drive said turbine rotor means; and

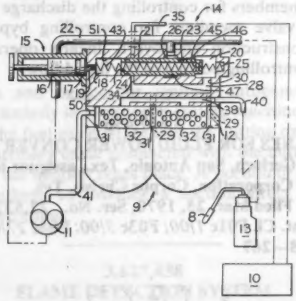
an exhaust line interconnecting each combustion chamber with a gas turbine and adapted to convey the products of combustion from each such combustion chamber to a gas discharge nozzle at said gas turbine during the course of upward movement of the free piston associated with said combustion chamber.

3,627,450

FUEL CONTROL VALVE

Harold L. Ward, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 18, 1970, Ser. No. 73,480
Int. Cl. F04b *23/08, 49/00*
U.S. Cl. 417—205 **8 Claims**



A single, multipurpose valve is located between a transfer pump and a fuel injection pump in an engine fuel system for performing multiple functions. The valve includes a valve body having a cylindrical internal bore and a valve sleeve reciprocable within the bore between four different positions. Lands, grooves, a port and an inner wall of the valve sleeve are positioned with respect to openings in the valve body to permit the valve to be operated as a priming mechanism to permit bleeding of the system when filling, to function as a bypass in controlling system pressure during operation and to provide a continuously controlled air bleed during engine operation. The multipurpose valve reduces the number of separate valves required for proper functioning of the fuel system and simplifies checkout in the event of malfunctions in the fuel system.

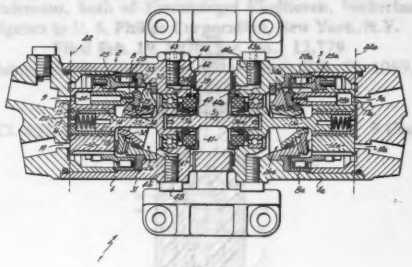
3,627,451

HYDRAULIC TRANSFORMER

Herbert H. Kouns, Camarillo, Calif., assignor to Abex Corporation, New York, N.Y.

Filed Apr. 1, 1970, Ser. No. 24,709
Int. Cl. F04b *1/00*
U.S. Cl. 417—271 **14 Claims**

A bidirectional hydraulic transformer for transferring power to or from either one of two separate and isolated hydraulic control circuits without the transfer of any hydraulic fluid between the circuits. The transformer comprises two axial piston pump/motor devices, the rotors of which are interlocked so that they rotate together, one acting as a motor to drive the other as a pump and supply power to the pump connected circuit.

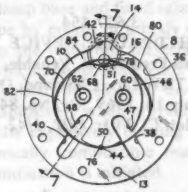


3,627,452

FLEXIBLE BAND FLUID DEVICE

Friedrich O. Bellmer, Stanhope, N.J., assignor to Worthington Corporation, Harrison, N.J.

Filed Dec. 13, 1968, Ser. No. 783,686
Int. Cl. F04c *5/00*
U.S. Cl. 418—45 **45 Claims**



A fluid machine is provided which is operable as a pump, compressor, or fluid motor, or as a combined fluid motor and pump or compressor, and comprises a working member taking the form of a flexible band which divides a working chamber into inner and outer working chambers and is flexurally movable through a cycle of operation therewithin to alternately expand and contract respective portions of said inner and outer working chambers. Inlet and outlet passages are provided in fluid flow communication with each of said inner and outer working chambers and are operable to enable the pumping or compression of fluid therethrough when the fluid machine is utilized as a pump or compressor, and/or to admit fluid under pressure thereto and exhaust the same therefrom when the fluid machine is utilized as a fluid motor or a combined fluid motor and pump or compressor.

3,627,453

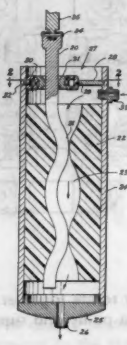
PUMPS AND MOTORS HAVING ECCENTRIC SHAFT SEALING MEANS

Wallace Clark, 1830 S. German Church Road, Indianapolis, Ind.

Filed July 10, 1970, Ser. No. 53,852
Int. Cl. F01c *1/10, 5/00;* **F03c** *3/00*
U.S. Cl. 418—48 **12 Claims**

A pump or motor of the type having a pair of helical gears fitted one within the other to define a rotor and a stator, the gear members being received in a cylindrical casing from which at least one end of the inner gear member projects, the

casing being sealed by a multiple part sealing member comprising a circular sealing ring engaging the inner surface of the casing and rotatable relative thereto, the sealing ring having an eccentrically disposed circular opening therein through which the inner gear member freely passes, the inner gear member mounting a tire which makes sealing contact



with the periphery of the circular opening in the sealing ring, the tire also contacting the inner surface of the casing at one side thereof, the tire and sealing ring being movable relative to each other and to the casing, the sealing member acting to close and seal the casing irrespective of relative rotational and gyrating movement between the inner and outer gear members.

3,627,454

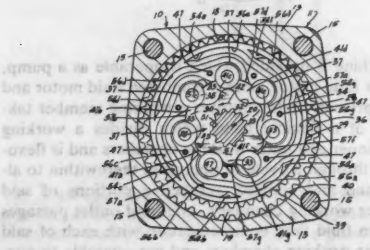
HYDRAULIC DEVICE

Raymon L. Goff, and Fredrick D. Venable, both of Lafayette, Ind., assignors to TRW Inc., Cleveland, Ohio

Filed July 14, 1969, Ser. No. 841,405

Int. Cl. F01c *1/02, 1/42*

U.S. Cl. 418—61 **11 Claims**



A hydraulic motor-pump assembly including a housing, a chamber formed in the housing, a shaft journaled in the housing and extending into the chamber and a gear set in the chamber including an externally toothed rotor mounted fast on the shaft and an internally toothed stator assembly surrounding the shaft in meshing relation. The stator assembly is geared to the housing so as to cause, in response to relative rotation of the rotor, orbital movement of the stator assembly about the axis of the rotor and rotational movement of the stator assembly about its own axis at a speed less than the speed of rotation of the rotor. Certain passages, ports and the like are provided in the housing and in the stator assembly for directing high- and low-pressure fluid to and from the expanding and contracting fluid pockets formed between the teeth of the stator assembly in a manner providing high operating efficiency. The motor-pump assembly has wide application including use in a vehicular hydraulic motor drive arrangement.

3,627,455

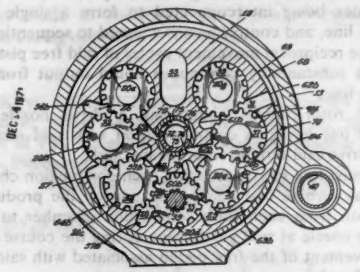
MULTICYCLE SELF-BALANCING GEAR PUMP

Pius J. Nasvytis, East Cleveland, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Feb. 5, 1970, Ser. No. 8,861

Int. Cl. F01c *1/24*

U.S. Cl. 418—196 **12 Claims**



A multicycle self-balancing gear pump incorporates a variable staging valve for changing the amount of discharge flow of the pump. The pump employs seven gears with six gear meshes at pumping states and the variable staging valve controls both discharge and bypass porting of the pump. In one embodiment the staging valve is a rotary valve having a pair of valving members for controlling the discharge portion and a pair of valve members for controlling bypass porting. Another construction employs a linearly operated staging valve for controlling porting of the liquid flow.

3,627,456

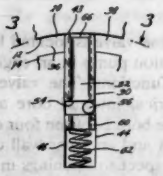
VANES FOR FLUID POWER CONVERTER

Charles R. Gerlach, San Antonio, Tex., assignor to Diversified Products Corporation, Corpus Christi, Tex.

Filed Mar. 25, 1970, Ser. No. 22,537

Int. Cl. F01c *1/00;* **F03c** *3/00;* **F04c** *27/00*

U.S. Cl. 418—267 **9 Claims**



A self-pressurizing reversible vane for use in a fluid pump or motor in which the width of the vane is sufficient to provide a close tolerance fit against both sides of the slot to eliminate slap, but having grooves down each side of the vane to allow high-pressure oil to get under the vane and provide self-loading and allowing the converter to be reversible. Movable vane groove-sealing means positioned at the bottom ends of the grooves and sized to seal only the groove means on the low-pressure side of the vane and being movable to the low-pressure side in response to pressure on the high-pressure side. A recess in the outer face of the vane admitting high-pressure fluid for providing pressure compensation for reducing mechanical losses.

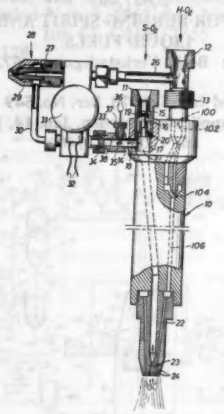
ERRATUM

For Class 425—307 see:
Patent No. 3,626,589

3,627,457
PROCESS AND DEVICE FOR IGNITING OXYACETYLENE CUTTING TORCHES

Georg Roder, Frankfurt am Main, Germany, assignor to Messer Griesheim GmbH, Frankfurt am Main, Germany

Filed Feb. 24, 1969, Ser. No. 801,695
Claims priority, application Germany, Feb. 24, 1968, P 17 29 894.1
Int. Cl. F23q *9/08*
U.S. Cl. 431—6 **11 Claims**

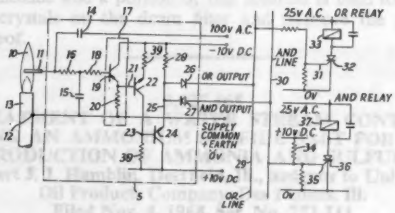


A process and device for igniting autogenous cutting torches, particularly in multitorch cutting machines, includes conducting the fuel gas mixture into the cutting oxygen canal or into an auxiliary canal connected with the cutting oxygen canal where the ignition takes place. A portion of the heating oxygen is utilized to produce a suction effect within the cutting oxygen canal.

3,627,458
FLAME DETECTION SYSTEM

Kenneth R. Wade, Burscough, nr. Ormskirk, England, assignor to United Gas Industries Limited, London, England

Filed Aug. 19, 1969, Ser. No. 851,390
Claims priority, application Great Britain, Aug. 27, 1968, 40,958/68
Int. Cl. F23n
U.S. Cl. 431—25 **8 Claims**

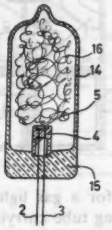


A flame detector, particularly for use in effecting automatic control of the fuel supply to burners, has a capacitor connected to an electrode which is disposed in the flame, when present at one of the burners or at a pilot burner, so that the capacitor charges up through the rectifying action of a said flame when an alternating current is supplied to the electrode.

3,627,459
FLASHBULB

Johannes Cornelis Van Der Tas, and Charles Cornelis Eduard Meulemans, both of Emmasingel Eindhoven, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

Filed Feb. 19, 1970, Ser. No. 12,779
Claims priority, application Netherlands, Feb. 21, 1969, 6902808
Int. Cl. F21k *5/02*
U.S. Cl. 431—95 **9 Claims**



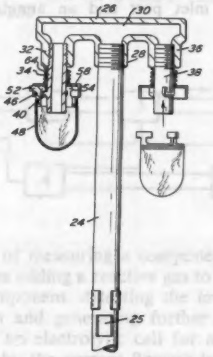
A flashbulb of the combustible type for ignition by means of a voltage increasing to a maximum value within a short period, the ignition mass being provided in a cavity in a body of electrically insulating material which encompasses and shields the current conductors within the envelope.

The invention relates to a flashbulb including an envelope of light-transmitting material within which an actinically combustible material, a gas maintaining the combustion and a stem are provided; the stem comprises two current conductors sealed in the lamp base and fixed relatively to each other within the envelope by means of a body of electrically insulating material. On the insulating material there is provided an ignition mass which connects the ends of the current conductors and is ignited by electric breakdown and subsequently burns explosively when a voltage is set up across the ends. Due to the explosively burning paste, the reaction between the actinically combustible material and the gas maintaining the combustion is initiated.

3,627,460
GAS LANTERN

Lester Gilman, Southampton, Pa., assignor to Progress Division, Walter Kidde & Co., Inc., Belleville, N.J.

Filed June 1, 1970, Ser. No. 42,416
Int. Cl. F21h *1/04*
U.S. Cl. 431—111 **6 Claims**



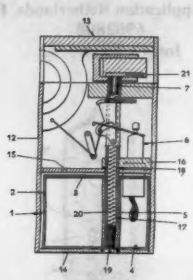
A gas lantern is provided with a spring-biased reflector or cover seated on the mantle so as to promote more complete combustion so that the lantern will burn brighter and cleaner.

3,627,461

FUEL CONTAINER FOR A GAS LIGHTER

Therese Christiane Hocq, Boulogne-Billancourt, France, assignor to Interflamme, Paris, France

Filed Dec. 23, 1969, Ser. No. 887,497
Claims priority, application France, Dec. 30, 1968, 182051
Int. Cl. F23q *2/16;* F23d *13/04*
U.S. Cl. 431—273 **6 Claims**



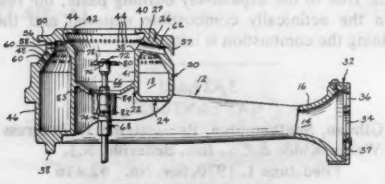
A fuel container, for a gas lighter, which has extending through it a supporting tube carrying a flint. The supporting tube is arranged, when the fuel container is inserted in the lighter, to receive a flint tube on the lighter and in which the flint is automatically positioned. The flint is retained in the supporting tube by means of a thin ribbon surrounding the fuel container and closing the ends of the supporting tube. The ribbon is broken when the fuel container is inserted into the lighter.

3,627,462

TOP GAS BURNER FOR A STOVE

William Lotter, South Bend, Ind., assignor to South Bend Range Corporation, South Bend, Ind.

Filed June 30, 1969, Ser. No. 837,611
Int. Cl. F23q *9/00*
U.S. Cl. 431—284 **6 Claims**



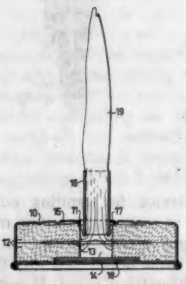
A top gas burner for a stove in which the burner housing thereof has a gas inlet port and an annularly disposed chamber communicating with said inlet port and defined in part by spaced inner and outer sidewalls. The upper margin of the inner sidewall of the burner housing has a first ring of gas outlet ports disposed therein in communication with said chamber and includes a flange which projects outwardly of the inner sidewall and which is positioned above said first ring of gas outlet ports. The upper margin of the outer sidewall of the burner housing has a second ring of gas outlet ports disposed therein in communication with said chamber and includes a flange which projects outwardly of the outer sidewall and which is positioned above said second ring of outlet ports. The burner housing has a bore extending from the upper margin of its inner wall to the upper margin of its outer wall adjacent a respective gas outlet port in each wall.

3,627,463

APPARATUS FOR BURNING SPIRIT AND SIMILAR LIQUID FUELS

Karl Oskar Arne Boij, Verkstadsgatan, 573 00 Tranas, Sweden

Filed Jan. 5, 1970, Ser. No. 549
Claims priority, application Sweden, Jan. 14, 1969, 426/69
Int. Cl. F23d *3/40*
U.S. Cl. 431—326 **3 Claims**



The present invention relates to an apparatus for burning liquid fuel in which a fuel container is filled with a fuel absorptive mass in which is provided a vertical burner channel in which burning of fuel evaporated from an exposed surface of the absorptive mass defining the channel takes place with supplied air.

CHEMICAL

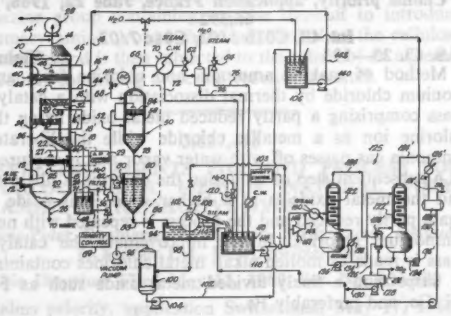
ERRATUM

For Class 23—232 see:
Patent No. 3,626,742

3,627,464
PROCESS FOR RECOVERING SO_2 FROM WASTE GASES

Jack D. Terrana, Tampa, and Leo A. Miller, Lakeland, Fla., assignors to Wellman-Lord, Inc., Lakeland, Fla.

Continuation-in-part of applications Ser. No. 594,431, Nov. 15, 1966, and Ser. No. 616,682, Feb. 16, 1967. This application Nov. 9, 1967, Ser. No. 681,773
Int. Cl. C01b *17/56*
U.S. Cl. 23—178 **25 Claims**



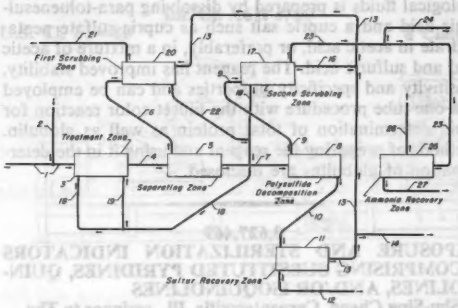
Process and apparatus for the recovery of sulfur dioxide from SO_2-containing gases in a system involving contacting the gas with an aqueous sulfite solution to produce a solution of the corresponding bisulfite which is a precursor of SO_2 and subsequently separating the bisulfite and SO_2-partial pressure lowering materials to obtain purer bisulfite which is then decomposed to regenerate sulfur dioxide. Examples of sulfites include potassium, cesium, and rubidium sulfites. In the process separation of the bisulfite is accomplished by vaporization of water from the bisulfite-containing solution, e.g. in a flash chamber to supersaturate the solution and precipitate the bisulfite, e.g. in an amount equivalent to the amount of the sulfur dioxide removed from the waste gases. Conditions are chosen to precipitate crystals having a size suitable for vacuum drum filtering. The crystals are advantageously redissolved prior to heating to regenerate the sulfur dioxide and a portion of this solution is used to wash the crystals on the drum filter and improve the purity thereof.

3,627,465
TREATMENT OF A WATER STREAM CONTAINING AN AMMONIUM SULFIDE SALT FOR THE PRODUCTION OF AMMONIA AND SULFUR

Robert J. J. Hamblin, Deerfield, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 4, 1968, Ser. No. 773,211
Int. Cl. C01c *1/00*; C01b *17/00, 21/00*
U.S. Cl. 23—193 **7 Claims**

In the production of elemental sulfur and ammonia by the oxidation of waste water containing an ammonium sulfide salt in the presence of an oxidation catalyst, such as solid phthalocyanine catalyst, followed by decomposition of the resultant ammonium polysulfide, thereby forming aqueous ammonium thiosulfate, the continuous recycle to the oxidation step of an aqueous stream containing $(NH_4)_2S_2O_3$ in order to suppress side reactions leading to this product in the oxidation step.



3,627,466
HEAT TREATMENT OF GRAPHITE FIBERS

Samuel Steingiser, Richard J. Phillips, and Robert A. Cass, Dayton, Ohio, assignors to Monsanto Research Corporation, St. Louis, Mo.

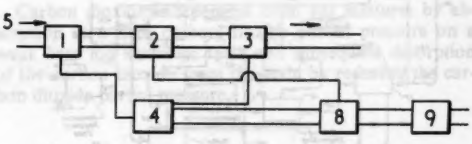
Filed May 28, 1970, Ser. No. 41,482
Int. Cl. C01b *31/07*; C09c *1/46*
U.S. Cl. 23—209.1 **5 Claims**

A process for improving the shear strength of a graphite fiber-resin matrix composite wherein the fibers are heat-treated in a controlled atmosphere containing ammonia at above 1000° C. prior to incorporation in the composite; such composites being useful as structural materials.

3,627,467
CONTINUOUS DETECTION METHOD AND APPARATUS

William Antony Wiseman, The Mill House, Bray, Berkshire, England

Filed Jan. 31, 1969, Ser. No. 796,318
Claims priority, application Great Britain, Feb. 2, 1968, 5,526/68
Int. Cl. G01m *27/26*
U.S. Cl. 23—230 **13 Claims**



A method of measuring a component in a gas stream which involves adding a reactive gas to the stream to react with said component, detecting the level of reactive gas after reaction and generating further compensatory, reactive gas in an electrolytic cell for addition to the gas stream whereby the current flowing in the cell is an accurate measure of gas consumption and hence of the component to be measured is improved by operating the reaction intermittently and averaging e.g. integrating the current during periods of reaction and non-reaction.

3,627,468

GLOBULIN DETERMINATION

Harry Goldenberg, Santa Monica, and Donald R. Wybenga, Alhambra, Calif., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed June 30, 1969, Ser. No. 837,896
Int. Cl. G01n *31/16, 31/22, 21/24*
U.S. Cl. 23—230 B 11 Claims

A stable reagent for the determination of globulins in biological fluids is prepared by dissolving para-toluenesultonic acid and a cupric salt such as cupric sulfate pentahydrate in acetic acid, or preferably, in a mixture of acetic acid and sulfuric acid. The reagent has improved stability, sensitivity and specificity properties and can be employed in a one-tube procedure with the biuret color reaction for rapid determination of total protein as well as globulin. Methods of preparing the reagent and using it in the determination of globulins are disclosed.

3,627,469

EXPOSURE AND STERILIZATION INDICATORS COMPRISING SUBSTITUTED PYRIDINES, QUINOLINES, AND/OR ISOQUINOLINES

Shu-Sing Cheng, Carpentersville, Ill., assignor to The Kendall Company, Walpole, Mass.

No Drawing. Continuation-in-part of abandoned application Ser. No. 721,206, Apr. 15, 1968. This application Apr. 27, 1970, Ser. No. 32,460
Int. Cl. G01n *21/06*
U.S. Cl. 23—232 R 28 Claims

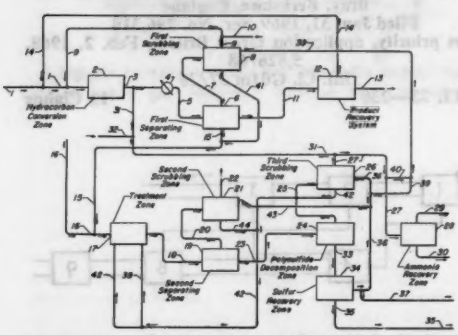
Exposure and sterilization indicators suitable for use in monitoring a sterilization process employing dry heat or an alkylating agent, such as ethylene oxide, as the sterilization agent are disclosed. The indicators, which function by means of change in color, comprise carrier members bearing selected substituted pyridines, quinolines, and/or isoquinolines.

3,627,470

COMBINATION OF A HYDROCARBON CONVERSION PROCESS WITH A WATER TREATING PROCESS FOR RECOVERY OF AMMONIA AND SULFUR

Robert J. J. Hamblin, Deerfield, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 23, 1968, Ser. No. 786,155
Int. Cl. C01b *17/00, 21/00;* C01c *1/00*
U.S. Cl. 23—193 10 Claims



A hydrocarbon charge stock containing sulfurous and nitrogenous contaminants is converted and elemental sulfur and an ammoniacal aqueous stream are simultaneously recovered by the steps of: (a) contacting the hydrocarbon charge stock and a hydrogen stream with a hydrocarbon conversion catalyst at conversion conditions sufficient to form an effluent stream containing substantially less sulfurous and nitrogenous contaminants, hydrocarbons, hydrogen NH_3 and H_2S; (b) then mixing this effluent stream with a substantially thiosulfate-free recycle water stream containing NH_4OH: (c) cooling and separating the resulting mixture to produce a gas stream containing hydrogen and H_2S, a hydrocarbon stream and a water stream containing NH_4HS; (d) scrubbing the H_2S from the gas stream with a recycle water stream containing NH_4OH and $(NH_4)_2S_2O_3$ to form a purified hydrogen stream and an aqueous bottom stream containing NH_4HS and $(NH_4)_2S_2O_3$; and (e) treating the water stream from step (c) and the aqueous bottom stream from step (d) to produce elemental sulfur and an aqueous ammoniacal product stream and to form the recycle water streams used in step (b) and in step (d).

3,627,471

PREPARATION OF CHLORINE AND AMMONIA FROM AMMONIUM CHLORIDE

Roger Botton, Paris, and Andre Steinmetz, Aubervilliers, Seine-St.-Denis, France, assignors to Produits Chimiques Pechiney-Saint-Gobain, Paris, France

No Drawing. Filed June 5, 1967, Ser. No. 643,366
Claims priority, application France, June 22, 1966, 66,392
Int. Cl. C01b *1/02;* C01c *7/02*
U.S. Cl. 23—193 13 Claims

Method of making ammonia and chlorine from ammonium chloride by thermal dissociation with a catalyst mass comprising a partly reduced metal oxide fixing the chlorine ion as a metallic chloride while the liberated ammonia gas passes off with water vapor and is captured. In a subsequent step of oxidation the chlorine is liberated and the metal oxide is in a higher state. This oxide is again partly reduced and the process is repeated with new ammonium chloride. In the improvement the catalyst mass is made of molten alkali metal chlorides containing in suspension a finely divided metal oxide such as Fe, Ni, Co, and preferably Fe.

3,627,472

DYE POLYMER DYEING WITH A DIACRYLAMIDO - 4 - ANILINO-2-SULFONIC ACID-1-AMINO-ANTHRAQUINONE

Brian Neville Parsons and Trevor James Smith, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Apr. 14, 1969, Ser. No. 816,039
Claims priority, application Great Britain, Apr. 17, 1968, 18,111/68
Int. Cl. C09b *3/60;* D06p *3/24, 5/00*
U.S. Cl. 8—4 10 Claims

A process for coloring fibers and films by treating them with a solution or suspension of a polymerizable anthraquinone dyestuff containing at least one aryloxy or arylamino residue. The treatment includes the use of a polymerization catalyst and provides dyeings and prints of high light fastness and fastness to wet treatments.

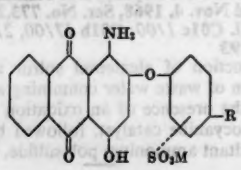
3,627,473

PROCESS FOR DYEING NYLON IN PINK SHADES

Robert W. Eltonhead, Reading, Pa., assignor to Crompton & Knowles Corporation, Worcester, Mass.

No Drawing. Filed May 3, 1965, Ser. No. 452,848
Int. Cl. D06p *1/20*
U.S. Cl. 8—21 B 7 Claims

The process for dyeing nylon fibers which comprises contacting said fibers with a dye of the structure



wherein M is —H or —Na and R is —H or an alkyl group of 1–9 carbons and the nylon fibers dyed with said dye.

3,627,474

PROCESS FOR THE COLORATION OF CELLULOSE TEXTILE MATERIAL WITH FIBER REACTIVE DYESTUFFS

Dennis Eckersley, Terence David Flynn, and Irwin Seltzer, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation-in-part of abandoned application Ser. No. 590,220, Oct. 28, 1966. This application Nov. 7, 1969, Ser. No. 874,975

Claims priority, application Great Britain, Nov. 5, 1965, 47,009/65

Int. Cl. D06p *3/66*

U.S. Cl. 8—25 **3 Claims**

Process for the coloration of cellulose textile material wherein the material is treated with a first chloro-s-triazine group containing reactive dyestuff to introduce primary amino groups chemically linked to the cellulose molecule and is then subjected to the action of an aqueous medium containing a second reactive dyestuff.

3,627,475

LEVELLING AGENTS FOR AND PROCESS FOR COLOURING A FIBROUS NATURAL POLYAMIDE WITH REACTIVE DYES

Hans-Peter Baumann, Basel-Land, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

No Drawing. Filed May 12, 1969, Ser. No. 823,980

Claims priority, application Switzerland, May 17, 1968, 7,402/68; May 27, 1968, 7,959/68; June 12, 1968, 8,743/68

Int. Cl. D06p *3/14*

U.S. Cl. 8—54 **10 Claims**

A levelling agent for colouring a fibrous natural polyamide with a reactive dye is constituted by an alkoxylated amine or an addition product thereof with a polybasic acid, or a quaternization product thereof, or an esterification product thereof (especially a sulphation product), or an etherification product thereof, said alkoxylated amine being similar to previously used levelling agents for similar purposes, except that the alkoxylated portion contains both ethylene oxide and propylene oxide groups, butylene oxide groups being optionally present in addition to said ethylene oxide and propylene oxide groups; the colouring may be effected, e.g., by dyeing, padding or printing and the natural polyamide is preferably wool, e.g. in the form of yarn or cloth.

3,627,476

AMIDE-GLYOXAL ADDITION PRODUCTS AND THEIR USE AS CROSSLINKING AGENTS

Sidney L. Vail and Andrew G. Pierce, Jr., New Orleans, La., Clifford M. Moran, San Gabriel, Calif., and Robert H. Barker, Metairie, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Feb. 23, 1966, Ser. No. 529,251. Divided and this application Apr. 9, 1970, Ser. No. 31,437

Int. Cl. D06m *13/12, 13/38*

U.S. Cl. 8—116.3 **2 Claims**

N-substituted amido-glyoxal addition products are formed (2M/1M) and used to treat cellulosic materials under conditions of acid catalysis.

3,627,477

APPARATUS FOR STERILIZING PRODUCTS

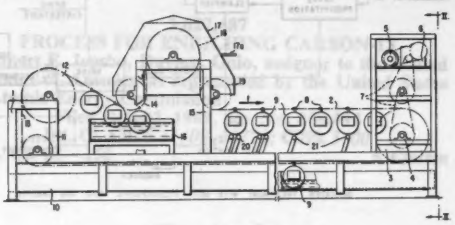
Max P. Beauvais, Paris, France, assignor to Reynolds Metals Company, Richmond, Va.

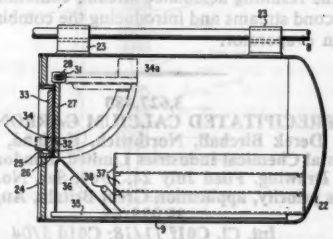
Filed Mar. 13, 1970, Ser. No. 19,422

Claims priority, application France, Apr. 25, 1969, 6913216

Int. Cl. A61l *3/00*

U.S. Cl. 21—80 **8 Claims**





An apparatus for sterilizing products placed within a closable vessel. The products to be sterilized are packed within containers which are themselves placed within and carried by the closable vessel. The latter is partially filled with a suitable liquid which is then vaporized and the vapor pressure used to close the vessel. Conveyor means feed the vessel intermittently and sequentially through loading, vaporizing, heat-maintaining, cooling, and unloading stations.

3,627,478

METHOD FOR SEPARATING CARBON DIOXIDE FROM OTHER GASES

Frederick Tepper, Butler, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Aug. 12, 1969, Ser. No. 849,319

Int. Cl. B01d *53/00, 53/14*

U.S. Cl. 23—2 **11 Claims**

Carbon dioxide is separated from gas mixtures by absorption at a high carbon dioxide partial pressure on a weak base ion exchange resin and subsequent desorption of the carbon dioxide from the resin by reducing the carbon dioxide partial pressure.

3,627,479

CHEMICAL-ELECTRO-CHEMICAL CYCLE FOR DESALINATION OF WATER

William C. Yee, Oak Ridge, Tenn., assignor to the United States of America as represented by the United States Atomic Energy Commission

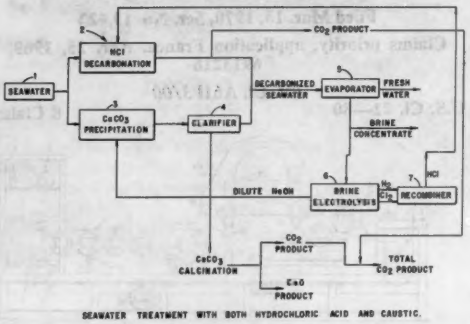
Filed Oct. 10, 1968, Ser. No. 766,438

Int. Cl. C01f *11/18;* **C23f** *15/00;* **B01d** *1/00*

U.S. Cl. 23—66 **3 Claims**

This invention is a method of removing scale-forming materials from sea water by adding an alkali to a first

feed stream of sea water, removing precipitated metal carbonates from the resulting alkaline stream, adding an acid to a second feed stream of sea water, removing CO_2



SEAWATER TREATMENT WITH BOTH HYDROCHLORIC ACID AND CAUSTIC.

from the resulting acidulated stream, combining said first and second streams and introducing the combined streams into an evaporator.

3,627,480

PRECIPITATED CALCIUM CARBONATE

James Derek Birchall, Northwich, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed July 24, 1969, Ser. No. 844,629
Claims priority, application Great Britain, Aug. 15, 1968, 39,025/68
Int. Cl. C01f *11/18*; C01d *3/04*
U.S. Cl. 23—66 **4 Claims**

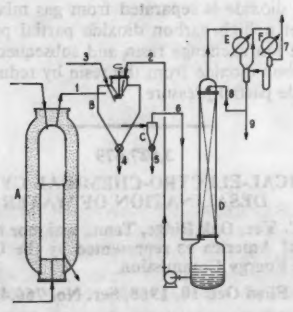
Calcium carbonate in the aragonite phase and in the form of needle-shaped crystals having major axes of up to 100 microns and minor axes of 0.10 to 3.0 microns is made by adding a source of carbonate ions to an aqueous solution of a calcium salt at temperatures above 70° C. whilst maintaining the calcium carbonate supersaturation below a given maximum value.

3,627,481

PROCESS FOR THE PURIFICATION OF TITANIUM TETRACHLORIDE

Giuseppe Sironi, Renzo Sacerdote, and Francesco Ferrero, Novara, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed May 6, 1969, Ser. No. 822,110
Claims priority, application Italy, May 10, 1968, 16,324/68
Int. Cl. C01g *23/02*
U.S. Cl. 23—87 TP **6 Claims**



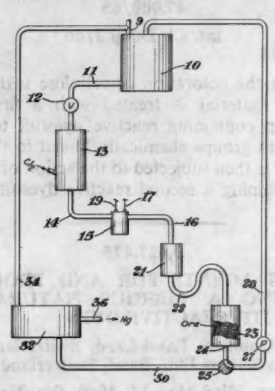
A process is disclosed for the purification of titanium tetrachloride from vanadium compounds by treatment with H_2S, wherein the hot gases coming from the chlorination step of the titaniferous material, containing $TiCl_4$ with impurities, are cooled down to 130–180° C. by injection and vaporization of liquid $TiCl_4$ and at the same time are treated with H_2S, thereby obtaining a vanadium-free gaseous phase containing $TiCl_4$ and a $TiCl_4$-free solid phase containing vanadium.

3,627,482

MERCURY ORE LEACHING PROCESS

Robert S. Olson, Lafayette, and Elmer C. Tveter, Walnut Creek, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 2, 1969, Ser. No. 821,222
Int. Cl. C01g *13/04*; C22b *3/00*
U.S. Cl. 23—87 R **14 Claims**



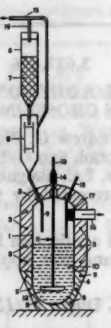
Disclosed herein is a process for leaching mercury values from their respective ores. The leaching solution comprises both an oxidizing agent such as dissolved chlorine or hypochlorite, and an inorganic salt, e.g. sodium chloride. The presence of the salt enhances the rate of mercury solubilization.

3,627,483

METHOD OF PURIFYING ALUMINUM CHLORIDE

Colin F. Cole and David John Spencer, Stockton-on-Tees, England, assignors to British Titan Products Company Limited, Durham, England

Filed Feb. 25, 1970, Ser. No. 14,238
Claims priority, application Great Britain, Mar. 29, 1969, 16,602/69
Int. Cl. C01f *7/58, 7/62*
U.S. Cl. 23—93 **12 Claims**



A method of purifying aluminum chloride containing other metallic chlorides as impurities in which the aluminum chloride is fed into a molten mixture of an alkali

metal salt and aluminum chloride having dispersed therethrough a metal more electropositive than iron but not more than aluminum to effect a reaction with the impurity metal chlorides. Preferably the metal is aluminum metal in the powdered form.

3,627,484
PROCESS FOR PRODUCING TELLURIUM DIOXIDE OF LOW IRON CONTENT
Stephen E. French and Thomas K. Preston, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 2, 1970, Ser. No. 15,565
Int. Cl. C01b *19/00*
U.S. Cl. 23—139 **8 Claims**

Powdered tellurium metal is added to hot concentrated nitric acid, with agitation. The reaction mixture is then heated at 110–110° C. until evolution of nitrogen dioxide stops and the direct formation of tellurium dioxide is complete. Then the reaction mixture is cooled to room temperature, the excess nitric acid is removed by siphoning and filtration, and the filter cake is washed with nitric acid and with water, after which the damp cake is heated at 90–150° C. to dry it without decomposition.

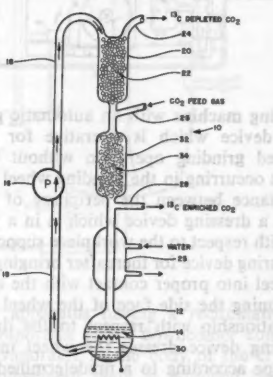
3,627,485
METHOD OF PRODUCING CALCIUM SULFATE DIHYDRATE
Shoichiro Hori, Tokyo, and Keiichi Murakami and Hirobumi Tanaka, Miyagi-ken, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
No Drawing. Filed Nov. 5, 1968, Ser. No. 773,643
Int. Cl. C01b *25/22*; C01f *11/46*
U.S. Cl. 23—122 **6 Claims**

Phosphoric acid-free and strontium-free calcium sulfate dihydrate is obtained from phosphate rock by decomposing phosphate rock with sulfuric and/or phosphoric acid of such temperature and concentration that a slurry of calcium sulfate dihydrate will be obtained. The temperature of the slurry is then raised to the conversion temperature of the calcium sulfate dihydrate into calcium sulfate semihydrate so that the calcium sulfate dihydrate will be converted into calcium sulfate semihydrate. Thereafter, the temperature is reduced to below the conversion temperature of the calcium sulfate semihydrate into calcium sulfate dihydrate whereby the calcium sulfate semihydrate will be converted into calcium sulfate dihydrate of high purity which may then be recovered in conventional manner, for istance by filtration. Preferably during the conversion of the semihydrate into the dihydrate, seed crystals consisting of twin crystals of calcium sulfate dihydrate are introduced.

3,627,486
PROCESS FOR REMOVING SELENIUM VALUES
Umeo Nakano, Montreal, Quebec, Canada, assignor to Canadian Copper Refiners Limited, Toronto, Ontario, Canada
Filed Apr. 1, 1969, Ser. No. 811,907
Int. Cl. C01b *19/00*
U.S. Cl. 23—139 **5 Claims**

In an operation wherein selenium values are recovered from pelletized selenium-containing materials involving heating pelletized selenium-containing materials in the presence of air so as to volatilize the selenium from said pelletized selenium-containing materials in the form of selenium dioxide, improved results are obtained by employing an apparatus wherein a mass of pelletized selenium-containing material is maintained static within a roasting zone and preheated air employed to heat the mass of pelletized selenium-containing materials is passed downwardly through said mass of pelletized selenium-containing materials maintained at a temperature of about 1350° F. for a period of time in the range about 1–6 hours sufficient to volatilize substantially all of the selenium from said pelletized selenium-containing materials and thereupon discharging the resulting substantially deselenized pelletized material from said roasting zone.

3,627,487
PROCESS FOR ENRICHING CARBON-13
Bernhart E. Jepson, Dayton, Ohio, assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed Oct. 22, 1969, Ser. No. 868,494
Int. Cl. C01b *31/00, 31/20*; C09k *3/00*
U.S. Cl. 23—150 **5 Claims**



A process for enriching carbon-13 isotope in carbon dioxide in which carbon dioxide feed gas is reacted with an isobutylamine and isopropanol solution to form a carbamate solution therewith and then the carbamate is decomposed from the solution to form carbon-13 enriched carbon dioxide.

3,627,488
CORROSION- AND EROSION-RESISTANT MATERIAL
Kenneth W. Dudley, Sudbury, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed July 7, 1969, Ser. No. 839,352
Int. Cl. B32b *15/20*
U.S. Cl. 29—199 **3 Claims**

A metallic material, such as copper, having a diffused surface which is highly resistant to corrosion and erosion, and method of making same.

3,627,489
FLAME COLORANTS
Henry E. Alquist, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed Aug. 21, 1969, Ser. No. 852,108
Int. Cl. C10l *1/12*
U.S. Cl. 44—1 R **7 Claims**

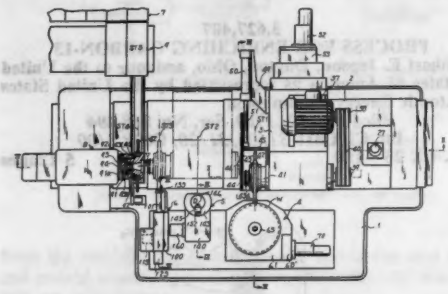
A combustible mixture comprising a fuel and a phosphorous trifluoride substituted metal carbonyl, and a method for forming the mixture are disclosed, the addition of the carbonyl to the fuel being made to impart color to the flame upon combustion of the fuel.

3,627,490

GRINDING MACHINE WITH AUTOMATIC WHEEL EXCHANGE DEVICE

Hiroaki Asano, Kariya, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed May 21, 1970, Ser. No. 39,243
Claims priority, application Japan, May 29, 1969, 44/41,933
Int. Cl. B24b *51/00*
U.S. Cl. 51—165.87 15 Claims



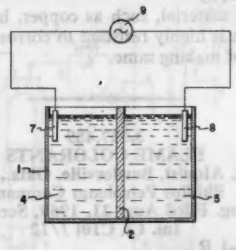
A grinding machine with an automatic grinding wheel exchange device which is operative for performing a programmed grinding operation without being affected by changes occurring in the grinding wheel diameter. The lateral distance between the periphery of an exchanged wheel and a dressing device which is in a predetermined position with respect to the workpiece support is measured by a measuring device for thereafter bringing the periphery of the wheel into proper contact with the dressing device and positioning the side face of the wheel in a predetermined relationship with respect to the dressing device. The dressing device dresses the wheel into a predetermined shape according to a predetermined program and the dressed grinding wheel then effects the desired grinding operation by using the dressing device as a reference position for controlling movement of the grinding wheel support with respect to the workpiece support device according to the predetermined program.

3,627,491

DIFFUSION METHODS FOR IMPROVING THE PROPERTIES OF GLASS, VITROCRYSTALLINE AND STONE MATERIALS

Maurice Boffe, Fleurus, and François Toussaint, Lodelinsart, Belgium, assignors to Glaverbel S.A., Watermael-Boitsfort, Belgium

Filed Apr. 18, 1968, Ser. No. 722,380
Claims priority, application Luxembourg, Apr. 24, 1967, 53,499/67; Great Britain, Dec. 22, 1967, 58,384/67
Int. Cl. C03c *21/00*
U.S. Cl. 65—30 9 Claims



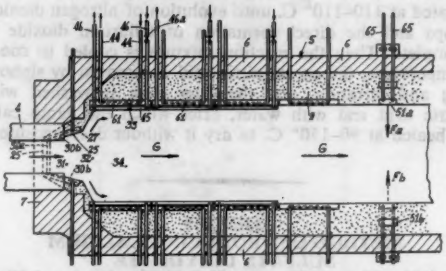
In processes wherein at least one property of a glass, vitrocrystalline or stone material is improved by the diffusion of a substance into the material from a medium communicating with the material, a method for substantially improving the diffusion process by including in the medium at least one material which has the effect of weakening the diffusion barrier at the interface between the material and the medium with respect to the substance to be diffused into the material, examples of such material being an element of Group IIb of Mendeleev's Periodic Table in metal form.

3,627,492

PROCESS FOR THE PRODUCTION OF FLOAT GLASS WITH EVEN EDGES

Georges Prislan, Boussois, France, assignor to Boussois Souchon Neuvesel, Paris, France

Filed Dec. 30, 1968, Ser. No. 787,975
Claims priority, application France, Jan. 11, 1968, 135,611
Int. Cl. C03b *18/02*
U.S. Cl. 65—91 1 Claim



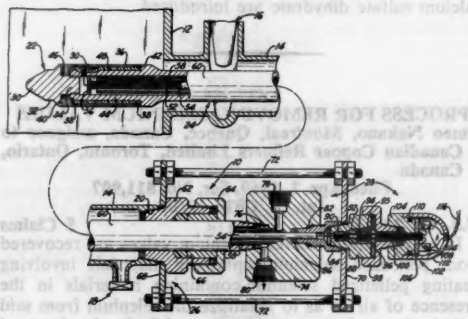
A process for the manufacture of a ribbon of flat glass by pouring a ribbon of molten glass onto a bath consisting of a liquid which has a higher specific density such as molten tin, said process consisting in causing the forward motion of the glass ribbon by drawing it out of the bath and in containing said ribbon at the sides by means of confining walls which are not wetted by the glass. At least one of the edges of the glass ribbon being formed is subjected downstream of the confining wall to a transverse deflection which tends to thicken said edge.

3,627,493

CONTROLLED TEMPERATURE CORROSION TESTING PROBE

Robert E. Manley, Lower Burrell, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

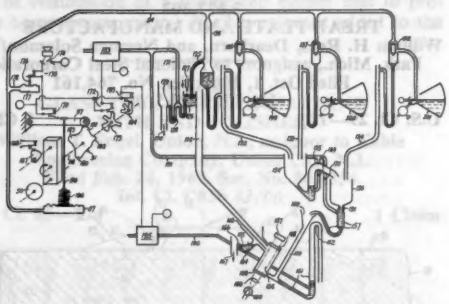
Filed Mar. 12, 1970, Ser. No. 18,964
Int. Cl. G01n *17/00*
U.S. Cl. 23—253 C 11 Claims



A probe for testing the corrosion resistance of a specimen of a material to a stream of corrosive fluid comprising means to electrically isolate the specimen from the

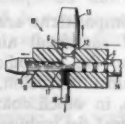
probe and means to control the temperature of the specimen. Temperature control is accomplished by flowing heat conditioning fluids, such as steam or cold water, through the probe, while isolating the specimen from the heat conditioning fluid.

3,627,494
AUTOMATIC ANALYZER
Vladimir Fähnrich, Prague, Czechoslovakia, assignor to CKD Dukla, Narodni Podnik, Prague, Czechoslovakia
Filed Dec. 19, 1968, Ser. No. 785,276
Claims priority, application Czechoslovakia, Dec. 20, 1967, 9,015/67; May 4, 1968, 3,276/68; May 17, 1968, 3,611/68; May 31, 1968, 4,011/68; Aug. 20, 1968, 6,018/68
Int. Cl. G01n *1/14, 21/00*
U.S. Cl. 23—259 16 Claims



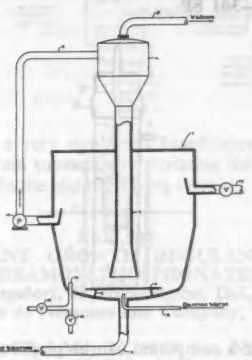
All arrangement for the automatic manipulation of reagent solutions through the application of pneumatic signals. The arrangement is equipped with photometric apparatus, dosing apparatus, fluid lifting devices, and pneumatic overflow pipettes. A pneumatic signalling arrangement applies pneumatic techniques for carrying out the analyzing of fluids through measurements, transfer procedures, mixing and flow-off steps. These analytical processes are carried out without the application of valves or closure elements, and the operational handling of the fluids in the form of sample fluid and reagent solutions are automatically carried out for photometric analysis.

3,627,495
DECANTATION FITTING
Stanford L. Adler, Jr., Monsey, and John C. A. Peoples, Nanuet, N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.
Filed May 25, 1970, Ser. No. 40,063
Int. Cl. G01n *33/16*
U.S. Cl. 23—253 R 5 Claims



A decantation fitting for fluid analysis having a body with an elongated relatively horizontal passageway portion with one end positively inletted at a predetermined volumetric rate for a gas-segmented sample-reagent stream and positively outletted at the other end at a predetermined volumetric rate for a supernatant portion of the stream. Intermediate the ends of the passageway portion and in communication therewith, is an upwardly extending passageway portion positively outletted at a predetermined volumetric rate for the gas in the stream and a small part of the supernatant portion. Below the last-mentioned passageway portion and extending a distance into the first-mentioned passageway portion is a downwardly extending decantation tube for the stream remainder including precipitate or settled-out material therein.

3,627,496
IMPINGEMENT PLATE FOR CRYSTALLIZER
John A. Hermann, Carlsbad, N. Mex., assignor to Kerr-McGee Corporation
Filed July 29, 1968, Ser. No. 748,448
Int. Cl. B01d *9/02*
U.S. Cl. 23—273 R 4 Claims



Crystallizing apparatus having a recirculation circuit including an evaporator and a downcomer conduit leading from the evaporator to the body of the crystallizing vessel. An impingement plate is provided between the outlet end of the downcomer conduit and the bottom wall of the crystallizing vessel, and the temperature of the impingement plate is maintained slightly higher than that of the solution coming from the downcomer conduit to prevent crystal formation and buildup.

3,627,497
APPARATUS FOR CATALYTIC AMMONIA OXIDATION
Louis A. Klein, Flushing, and Daniel J. Newman, Jackson Heights, N.Y., assignors to Chemical Construction Corporation, New York, N.Y.
Filed Jan. 12, 1970, Ser. No. 2,036
Int. Cl. B01j *9/04;* B01d *46/00;* C22b *11/00*
U.S. Cl. 23—288 8 Claims

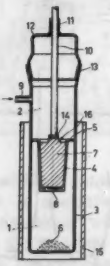
An improved apparatus is provided for catalytic ammonia oxidation and recovery of particles of platinum group metal entrained in the hot process gas mixture formed by the catalytic reaction, which takes place in contact with a vertically oriented cylindrical platinum group metal catalyst gauze which is combined with a vertically oriented cylindrical filter principally composed of a porous refractory filter medium such as ceramic fiber.

3,627,498
GROWTH OF CRYSTALLINE CHALCOGENIDE SPINELS
Larry K. Shick, Plainfield, and Allyn R. Von Neida, Summit, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Sept. 30, 1968, Ser. No. 763,627
Int. Cl. B01j *17/32*
U.S. Cl. 23—294 6 Claims

Crystalline chalcogenide spinels of the stoichiometry ACr_2Se_4, where A is zinc or cadmium, and $A'Cr_2S_4$, where

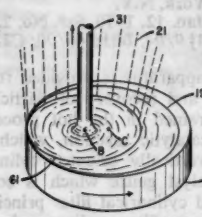
A' is zinc, cadmium, cobalt, manganese, iron, copper or nickel, are grown within a sealed container at temperatures above those expected to result in decomposition of the product. Crystalline growth appears within a body of liquid produced by vapor condensation.

3,627,499
METHOD OF MANUFACTURING A CRYSTALLINE COMPOUND
Jean-Marc Le Duc and Emile Deyris, Caen, France, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 21, 1969, Ser. No. 792,528
Claims priority, application France, Jan. 18, 1968, 136,487
Int. Cl. B01j *17/22, 17/18*
U.S. Cl. 23—301 SP **9 Claims**



Crystals of a compound can be prepared, for example, by the continuous drawing from the solution of a compound in one of its components. During drawing the solution depletes in one of the other components. This component may be supplied to the solution in vapour form but this must not be done through the surface from which it is drawn, but through another surface solution vapour which is separated spatially from the surface from which it is drawn.

3,627,500
METHOD OF GROWING SEMICONDUCTOR RODS FROM A PEDESTAL
Theodore F. Ciszek, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
Filed Apr. 3, 1969, Ser. No. 813,267
Int. Cl. B01j *17/18*
U.S. Cl. 23—301 SP **10 Claims**

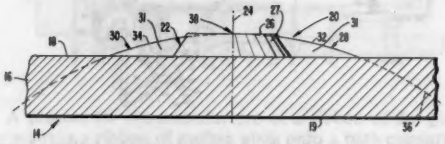


A method for growing semiconductor rods from a self-supporting block of material wherein the formation of a rim around the perimeter of the block of material is prevented by bombarding the upper surface of the block of material with an annulus of electrons whose center is offset from the center of the upper surface of the material, thereby causing every portion of the upper surface to periodically be heated by said beam of electrons. The rod is drawn from a pool of melted material on the upper surface of the block of material and approximately at the center of the annulus of electrons.

3,627,501
PROCESS FOR THE DISPROPORTIONATION OF CHLOROSILANES AND ORGANOSILANES
Manfred Kruger, Offenbach, Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt (Main), Germany
No Drawing. Filed June 24, 1969, Ser. No. 836,175
Claims priority, application Germany, June 29, 1968, P 17 67 905.9
Int. Cl. C07f *7/12, 7/18*
U.S. Cl. 23—366 **16 Claims**

Chlorosilanes and organosilanes having at least one Si—H bond are disproportionated to hydrogen rich and hydrogen poor products by use of an activated carbon catalyst. The disproportionation is also obtained with good success using alkali metal halides admixed with transition metal halides or cyanides as catalysts.

3,627,502
TREAD PLATE AND MANUFACTURE
William H. Rees, Dearborn, and Norman Solomon, Oak Park, Mich., assignors to National Steel Corporation
Filed Oct. 1, 1968, Ser. No. 764,161
Int. Cl. B22f *5/00*
U.S. Cl. 29—183 **8 Claims**



Tread plate has antiskid protuberances comprising flat-topped circular protrusions, and elongated convex projections radiating from the circular protrusions. The tread plate has improved walking comfort and antiskid properties, and its construction facilitates machining of the rolls which produce the tread plate. In roll machining antiskid protuberance-forming recesses are machined in the rolls by cutting a groove having a concave bottom surface, then aligning a drill over the groove and drilling a flat-bottomed hole, the bottom of which is contiguous to the deepest portion of the groove.

3,627,503
SACRIFICIAL CORROSION-RESISTANT DIFFUSION COATINGS
Harry Brill-Edwards, San Antonio, Tex., assignor to Chromalloy American Corporation, West Nyack, N.Y.
No Drawing. Filed May 31, 1968, Ser. No. 733,286
Int. Cl. B32b *15/00*
U.S. Cl. 29—197 **2 Claims**

Methods and compositions are provided herewith for the production of sacrificial aluminum-containing diffusion coatings for the cathodic protection of ferrous metal articles against corrosion, particularly in highly saline atmospheres, in which coating an additional metal (such as manganese) is included to combine with the aluminum therein to form an intermetallic compound which is sufficiently anodic with respect to the substrate and/or intermetallic aluminum compounds therein to provide the desired sacrificial or cathodic protection.

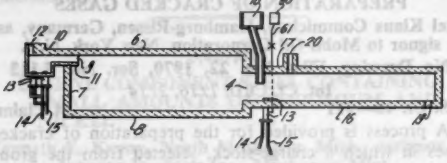
ERRATA

For Classes 44—1, 51—165, 65—30 and 65—91 see: Patent Nos. 3,627,490 thru 3,627,492

3,627,504
METHOD OF ADDING COLORANT TO MOLTEN GLASS

Andrew L. Johnson, New Castle, and Leon F. Robertson, Brockway, Pa., assignors to Glass Container Industry Research Corporation, State College, Pa.

Filed Dec. 29, 1969, Ser. No. 888,324
Int. Cl. C03b 5/04
U.S. Cl. 65—135 3 Claims

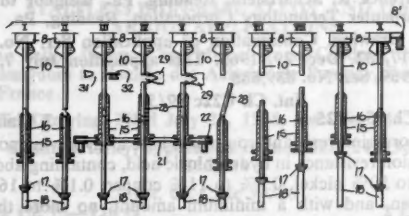


Molten glass batch is colored by utilizing the hot products of combustion of a submerged burner unit to promote homogenous mixing of glass colorant added to the batch.

3,627,505
GLASS TUBE CUTTING MACHINE WITH END POLISHER

William T. Engel, Union, N.J., assignor to Kahle Engineering Company, Union City, N.J.

Filed Feb. 24, 1969, Ser. No. 801,354
Int. Cl. C03b 33/06
U.S. Cl. 65—174 1 Claim



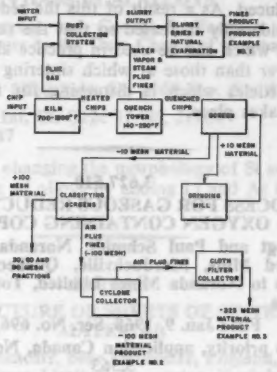
An automatic machine for cutting short lengths of glass tubing from longer lengths of tubing stock. The lengths of tubing stock to be cut are mounted in a vertical position in support chucks at the edge of a rotating turret. The support chucks are periodically opened to lower the glass tubing a distance equal to the length of the short tubing being cut on the machine. After each tube is lowered, a cutting flame and wheel cut or crack the tube to sever the shortened piece. The short piece which has been cut from the tube drops a slight distance so that its upper edge is spaced from the lower edge of the remaining tube. After this spacing has been provided, a polishing flame is directed simultanecusly against both of the spaced edges so that they are smoothly fire-polished. This polishing operation, therefore, completes a polishing of both ends of the cut tube since the lower end of the cut tube was polished during the previous cutting and polishing cycle. The completed short length of tubing with both ends polished is now removed from the machine in finished form, and no additional fire polishing is required.

3,627,506
METHOD OF TREATING PLANTS WITH FINELY DIVIDED FERRUGINOUS MATERIAL

George J. Tazelaar, Rocky River, Vernon S. Andrews, South Euclid, and Ronald H. MacDonald, Jr., Novelty, Ohio, assignors to Martin Marietta Corporation

Filed May 1, 1970, Ser. No. 33,552
Int. Cl. C05 9/02
U.S. Cl. 71—1 15 Claims

A method of treating plants or the soil bearing the plants by means of the addition of a ferruginous materail to prevent or overcome an iron deficiency in the soil. The method comprises adding to the soil a finely divided material from cast iron chips which chips are pre-treated by heating to a temperature on the order of at least 700° F. to 1200° F. and are then quenched in water. This addition results in a very significant benefication of the soil and plants therein substantially obviating the existence of iron deficiency in the plants growing therein.



3,627,507
PLANT GROWTH REGULANT CARBAMOYLPHOSPHONATES

William P. Langsdorf, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 24, 1968, Ser. No. 731,732
Int. Cl. A01n 5/00
U.S. Cl. 71—76 23 Claims

This disclosure teaches a method for employing novel carbamoylphosphonates such as ammonium ethyl carbamoylphosphonate and ammonium allyl carbamoylphosphonate to regulate the growth rate of plants.

3,627,508
PROCESS OF BENEFICIATION

William Hughes, Norton, and Frank Ronald Williams, Norton, Stockton-on-Tees, England, assignors to British Titan Products Limited, Billingham, England

No Drawing. Filed July 22, 1969, Ser. No. 843,833
Claims priority, application Great Britain, Aug. 14, 1968, 38,811/68
Int. Cl. C01g 23/04; C22b 1/08
U.S. Cl. 75—1 14 Claims

Beneficiation of a titaniferous ore in which the iron oxide present in the ore is reduced to a form such that it can be removed by leaching, for example, with a dilute acid and after leaching, chlorinating the ore under such conditions that any remaining iron and other chlorinatable impurities are converted to volatile chlorides without chlorinating to any substantial extent the titanium dioxide in the ore. The volatile chlorides are removed from the treated ore to produce an enriched ore having the characteristics of naturally occurring mineral rutile.

3,627,509
METHOD OF PREPARING A MAGNETICALLY STABLE METAL POWDER CONSISTING MAINLY OF IRON AND MEANT FOR MAGNETIC RECORDING

Aart Antonie van der Giessen, and Cornelis Johannes Klomp, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

No Drawing. Filed Apr. 1, 1970, Ser. No. 24,822
Claims priority, application Netherlands, Apr. 8, 1969, 6905417
Int. Cl. B22f 9/00
U.S. Cl. 75—.5 AA 3 Claims

The invention relates to a method of preparing metal powders mainly consisting of iron and meant for mag-

netic recording by reduction of an iron oxide or an iron oxide hydrate and is characterized in that a measured quantity of silver is previously deposited on the material to be reduced. As a result of this the reduction speed is also considerably increased so that the reduction occurs at speeds which can be used in practice also at temperatures lower than those at which sintering of the formed metal particles which is disturbing for the application in view takes place.

3,627,510

PROCESS FOR GASEOUS REDUCTION OF OXYGEN CONTAINING COPPER

John Vogt and Paul Schmidt, Noranda, Quebec, and Leonard Mills, Murdochville, Quebec, Canada, assignors to Noranda Mines Limited, Toronto, Ontario, Canada

Filed Jan. 9, 1968, Ser. No. 696,526

Claims priority, application Canada, Nov. 20, 1967, 5,563

Int. Cl. C22b *9/08, 15/14*

U.S. Cl. 75—76 **18 Claims**

In order to reduce the oxygen content of molten copper in a furnace, a reductant comprising unreformed natural gas, a gaseous hydrocarbon, or mixtures thereof is injected below the surface of the molten copper. The reductant may be used alone or in combination with steam. So as to achieve satisfactory reduction of the oxygen-containing copper, the reductant is preferably injected at a high pressure, pressures above 30 p.s.i.g. and as great as 100 p.s.i.g. being utilized, or optionally the reductant is preheated (prior to injection) to a temperature close to that of the molten copper. The injection of the reductant into the furnace is continued until the oxygen content of the molten copper is reduced to a desired level.

3,627,511

HIGH CHROMIUM ALLOYS OF IMPROVED WORKABILITY

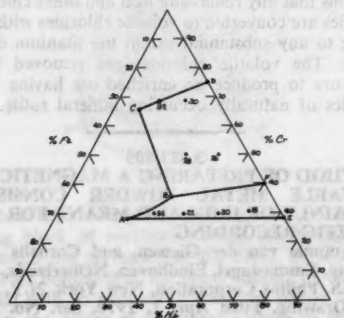
Brian Taylor, Birmingham, and Philip James Parry, Solihull, England, assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Feb. 7, 1969, Ser. No. 797,515

Claims priority, application Great Britain, Feb. 8, 1968, 6,290/68

Int. Cl. C22c *39/20, 39/54*

U.S. Cl. 75—122 **11 Claims**



Workability and torsion ductility of high chromium-nickel (e.g., 50% chromium) and chromium-nickel-iron alloys improved when the alloys contain an effective amount of an eutectic forming element from the group zirconium, hafnium, yttrium and cerium.

3,627,512

PREPARATION OF CRACKED GASES

Axel Klaus Commichau, Hamburg-Rissen, Germany, assignor to Mobil Oil Corporation, New York, N.Y.

No Drawing. Filed Jan. 22, 1970, Ser. No. 5,113

Int. Cl. C01b *1/16, 2/14*

U.S. Cl. 48—211 **14 Claims**

A process is provided for the preparation of cracked gases in which a charge-stock, selected from the group consisting of oligomers of lower olefins, hydrogenation products of lower olefin-oligomers, copolymers of lower olefins and their hydrogenation products and mixtures thereof, is subjected to vapor phase cracking in the presence of a reforming catalyst.

3,627,513

HYDROCHLORIC ACID RESISTANT FERROUS ALLOY CONTAINING NICKEL, COPPER AND TUNGSTEN

Lawrence R. Scharfstein, Reading, Pa., assignor to Carpenter Technology Corporation, Reading, Pa.

No Drawing. Continuation of application Ser. No. 517,432, Dec. 29, 1965. This application July 7, 1969, Ser. No. 839,685

Int. Cl. C22c *39/54*

U.S. Cl. 75—125 **3 Claims**

A corrosion resistant iron-nickel base alloy having good corrosion resistance in hydrochloric acid, containing about 25% to 50% nickel, 0.5% to 11% copper, 0.1% to 16% tungsten, and with a minimum amount, no more than about 1%, of strong surface oxide-forming elements such as chromium.

3,627,514

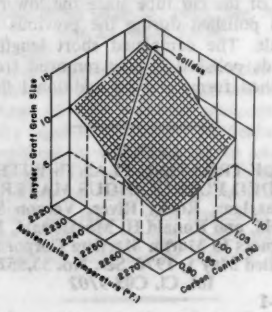
HIGH-SPEED STEEL CONTAINING CHROMIUM, TUNGSTEN, MOLYBDENUM, VANADIUM AND COBALT

Gary Steven, Mount Lebanon, Pa., assignor to Crucible Inc., Pittsburgh, Pa.

Filed May 7, 1969, Ser. No. 822,672

Int. Cl. C22c *39/14*

U.S. Cl. 75—126 C **1 Claim**



This invention relates to a tool steel consisting essentially of, in weight percent, carbon 1 to 1.4, chromium

4 to 6, vanadium 1 to 1.5, tungsten 7.5 to 13, molybdenum 3.5 to 7, cobalt 9 to 15, nitrogen at least about .03 and preferably .03 to .08, and the balance iron. The invention also relates to a tool steel compact of this steel produced by a powder-metallurgy technique also in accordance with this invention. The tool steel article is characterized by a combination of good cutting performance and machinability.

3,627,515

ENGINE COMPONENT STEEL CONTAINING SMALL AMOUNTS OF CHROMIUM AND NICKEL

Kenneth E. Kueny, North Muskegon, Mich., assignor to Johnson Products Inc., Muskegon, Mich.

No Drawing. Filed May 7, 1970, Ser. No. 37,015

Int. Cl. C22c *39/20*

U.S. Cl. 75—128 **5 Claims**

An internal combustion engine component having at least the bearing surface of a hardenable ferrous alloy containing both titanium and tungsten in controlled ranges giving synergistic results in wearability.

3,627,516

STAINLESS IRON-BASE ALLOY AND ITS VARIOUS APPLICATIONS

Jean Bellot, Pompey, and Michel Hugo, Custines, France, assignors to Societe des Acieries de Pompey, Pompey, France

No Drawing. Filed July 22, 1968, Ser. No. 746,285

Claims priority, application France, July 24, 1967, 115,444

Int. Cl. C22c *39/20*

U.S. Cl. 75—128 G **2 Claims**

Iron-base alloy for making high-temperature working slugs, containing carbon, nickel, chromium, manganese, silicon and the usual impurities and having a niobium content comprised between 0.3 and 2.0% by weight, said alloy having preferably the following composition:

Carbon—from about 0.05% to 0.70% by weight
Chromium—from about 20% to 30% by weight
Nickel—from about 30% to 40% by weight
Niobium—from about 0.20% to 3% by weight
Silicon—from about 0.50% to 2.50% by weight
Manganese—from about 0.50% to 2.50% by weight
Nitrogen—from about 0.02% to 0.20% by weight
Phosphorus and sulphur—less than 0.05% by weight

the rest being iron.

3,627,517

TERNARY FUSIBLE ALLOY

Rolf A. Ibscher, Scarborough, Ontario, Canada, assignor to Canadian General Electric Company Limited, Toronto, Ontario, Canada

No Drawing. Filed Dec. 13, 1968, Ser. No. 783,764

Claims priority, application Canada, Dec. 16, 1967, 7,770

Int. Cl. C22c *31/00*

U.S. Cl. 75—134 T **4 Claims**

A low temperature melting ternary alloy suitable for thermal fuses in ballasts containing eutectic of indium, tin, and the balance silver or copper.

3,627,518

MODIFICATION OF Si and Mg_2Si SECOND PHASE IN Al ALLOYS

Garth D. Lawrence and George S. Foerster, Midland, Mich., assignors to the Dow Chemical Company, Midland, Mich.

No Drawing. Filed Sept. 26, 1969, Ser. No. 861,459

Int. Cl. C22c *21/00, 21/04*

U.S. Cl. 75—147 **4 Claims**

A method of changing the morphology of Si and Mg_2Si second phase in Al alloys by adding Li and As to the Al alloy melt.

3,627,519

MANUFACTURE OF SHEETS OF SINTERED MATERIAL

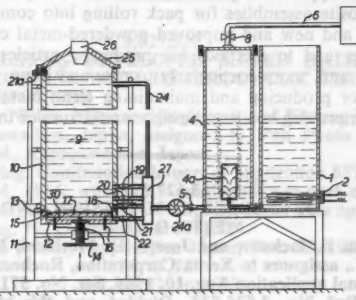
John Baker, Bessacarr, near Doncaster, England, assignor to British Ropes Limited, Doncaster, Yorkshire, England

Filed Apr. 14, 1969, Ser. No. 815,888

Claims priority, application Great Britain, Apr. 16, 1968, 17,992/68

Int. Cl. B22f *3/16, 3/18*

U.S. Cl. 75—211 **9 Claims**



A method of and apparatus for manufacturing sheets of sintered material, which method includes the steps of forming a suspension of particles of sinterable material in a fluid, allowing particles to be deposited from the suspension to form a layer on a support, and sintering the particles in the layer to form a coherent sheet.

3,627,520

METHOD OF PRODUCING POROUS SINTERED TANTALUM

Donald G. Rogers, Pownal, Vt., assignor to Sprague Electric Company, North Adams, Mass.

Filed Jan. 29, 1970, Ser. No. 6,872

Int. Cl. B22f *7/00*

U.S. Cl. 75—222 **4 Claims**

Porous sintered anodes suitable for use in electrolytic capacitors of the wet or solid type are produced by mixing a high percentage of an inorganic filler with a conventional tantalum powder and then heating the mixture so as to evaporate the inorganic filler and cause a sintering of the tantalum particles.

3,627,521

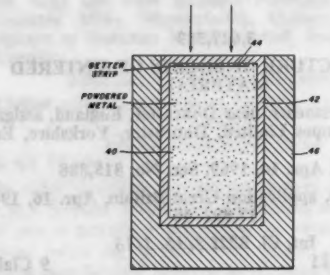
METHOD OF FORMING A POWDERED-METAL COMPACT EMPLOYING A BETA-TITANIUM ALLOY AS A GETTER FOR GASEOUS IMPURITIES

Milton B. Vordahl, Henderson, Nev., assignor to Crucible Inc.

Application Mar. 16, 1967, Ser. No. 638,164, now Patent No. 3,466,734, dated Sept. 16, 1969, which is a continuation-in-part of application Ser. No. 582,640, Sept. 28, 1966. Divided and this application Feb. 28, 1969, Ser. No. 823,221

Int. Cl. B22f *3/00*

U.S. Cl. 75—226 6 Claims



This application pertains to new and improved metal composite assemblies for pack rolling into composite articles and new and improved powdered-metal compacted articles and to methods for producing articles of these types, and, more particularly to new and improved methods for producing and maintaining clean metal surfaces and improving bonding during manufacture of the articles.

3,627,522

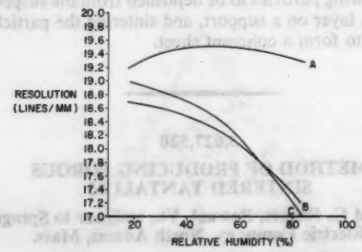
DEVELOPER COMPOSITION AND METHOD OF USE

Burton B. Jacknow and Joseph H. Moriconi, Rochester, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Original application Aug. 10, 1966, Ser. No. 571,509, now Patent No. 3,526,533. Divided and this application Dec. 30, 1969, Ser. No. 889,105

Int. Cl. G03g *9/02*

U.S. Cl. 96—1 10 Claims



An electrostatographic developer composition comprising finely divided toner particles electrostatically clinging to the surface of larger carrier particles wherein the carrier particles comprise a core surrounded by a thin outer layer comprising a solid polymeric addition reaction product of (1) at least one polymerizable unsaturated silicon free organic composition and (2) a polymerizable organosilicon composition selected from the group consisting of silanes, silanols and siloxanes having from 1 to 3 hydrolyzable groups and an organic group attached directly to a silicon atom containing an unsaturated carbon to carbon linkage. Processes of using the developer composition to develop an electrostatic latent image are also disclosed.

3,627,523

MULTIPLE POWDER TRANSFER IN PHOTOELECTROSTATIC DUPLICATOR

Loren E. Shelffo, Palatine, Ill., assignor to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

Filed Mar. 14, 1968, Ser. No. 713,111

Int. Cl. G03g *13/00, 13/14*

U.S. Cl. 96—1.4 9 Claims

A process for duplicating on plain paper utilizing electrostatic techniques to repeatedly produce a transferable powder image on a photoelectrostatic member coated with a layer of photoconductive material and successively transfering the powder image to the plain paper. Transfer of the powder image from the photoconductive layer is accomplished under strictly controlled conditions of pressure maintained in the range of 2 to 8 pounds per square inch while optionally imposing an electrical field between the receiving sheet and the photoelectrostatic member in the range of 0–3000 volts.

3,627,524

CHLORINE SUBSTITUTED 9-VINYLCARBAZOLE PHOTOCONDUCTOR

Kikuo Kinjo, Tokyo, Teruo Yamanouchi, Fujisawa, and Eiichi Kondo, Hiroshi Matsuno, and Katsuhiko Nishide, Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed July 13, 1970, Ser. No. 54,561

Claims priority application Japan, July 18, 1969, 44/56,806; Feb. 4, 1970, 45/9,837

Int. Cl. H01l *13/00;* C08f *5/00;* G03g *5/00*

U.S. Cl. 96—1.5 28 Claims

An electrophotographic photosensitive material comprises a polymer (homopolymer or copolymer) containing a chlorine substituted 9-vinylcarbazole repeating unit.

3,627,525

BIS(DIALKYLAMINOARYL) ALKANOL ORGANIC PHOTOCONDUCTORS

Jerome J. Looker and Charles J. Fox, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Sept. 26, 1969, Ser. No. 861,443

Int. Cl. G03g *5/06*

U.S. Cl. 96—1.5 9 Claims

Bis(dialkylaminoaryl) alkanol compounds are useful as organic photoconductors in electrophotographic systems.

3,627,526

ELECTROPHOTOGRAPHIC RECORDING ELEMENTS WITH HALF-TONE SCREEN COATINGS THEREON

Philip Joseph Donald, Woodbury, N.J., assignor to RCA Corporation

Filed Dec. 29, 1969, Ser. No. 888,248

Int. Cl. G03g *5/04*

U.S. Cl. 96—1.5 1 Claim

An electrophotographic recording element comprises a photoconductive layer on a relatively conductive substrate, and a coating of a partially light-transmitting material on the photoconductive layer. The coating of the light-transmitting material is in a pattern of a half-tone screen, covering only a portion of the photoconductive layer, so that the recording element provides half-tone type prints in an electrophotographic process.

3,627,527

ORGANIC PHOTOCONDUCTORS SENSITIZED BY DYES WHICH EXHIBIT SPECTRAL ABSORPTION SHIFTS ON HEATING

Paul B. Gilman, Rochester, and Ronald G. Raleigh, Brockport, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Aug. 22, 1969, Ser. No. 852,472
Int. Cl. G03g 5/06
U.S. Cl. 96—1.6 10 Claims

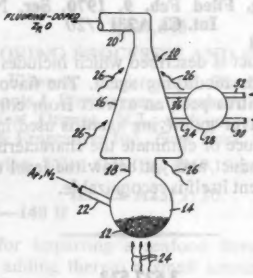
Electrophotographic elements are prepared from photoconductive compositions which are spectrally sensitized with dyes which are sensitive to heat. When these elements are developed and heated, the dye undergoes a shift in the radiation absorption. Such a shift generally decreases the optical opacity of the elements, thereby permitting the image-bearing elements to be used as masters from which further reproductions can be made.

3,627,528

ELECTROPHOTOGRAPHIC RECORDING ELEMENT HAVING PHOTOCONDUCTOR WITH QUENCHED LUMINESCENCE DURING CHARGING AND METHOD OF MAKING THE PHOTOCONDUCTOR

Edward Charles Giaimo, Jr., and Simon Larach, Princeton, N.J., assignors to RCA Corporation

Filed May 12, 1969, Ser. No. 823,906
Int. Cl. G03g 5/00, 7/00
U.S. Cl. 96—1.8 2 Claims



An electrophotographic recording element has a photoconductive layer that comprises a novel photoconductor with quenched luminescence during the electrostatic charging thereof. The photoconductive layer may also comprise a light-sensitizing dye that has a light-absorption band within the range of the luminescence emission of the photoconductor. A novel method of making the photoconductor comprises doping substantially pure zinc oxide with a fluoride.

3,627,529

PROCESS FOR PREPARING A LITHOGRAPHIC PRINTING PLATE

Victor S. Frank, Silver Spring, Md., and Leon Yeshin, Bedford, England, assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Oct. 11, 1968, Ser. No. 766,966
Int. Cl. G03f 7/02
U.S. Cl. 96—33 13 Claims

Lithographic printing plates are obtained from a laminated element containing a photocurable composition. Said element includes a photocurable layer laminated between a support layer, and a top cover. A dry process is disclosed for preparing positive and negative images in a single-image exposure. The process, for example, includes placing a photocurable layer between two sheets, at least one of which is transparent, imagewise exposing the laminate to actinic or U.V. radiation, and separating the sheets. The imagewise exposure is through a halftone or line positive or negative transparency, or a stencil. Depending upon the system, a positive image attaches to the sheet proximate, the light source, and the negative image to the other sheet, or vice versa. The two sheets have different adhesive forces for photocured and uncured photoadhesive compositions which accounts for the adhesion of the photocured and uncured compositions to different sheets. The sheet containing the photocured composition is, in effect, a lithographic printing plate in that the support surface or the surface of the photocured composition is relatively oleophilic. The photocurable polymer contains at least a polyene, a polythiol, and a photocuring rate accelerator.

3,627,530

PHOTOGRAPHIC DEVELOPER SOLUTIONS OF HIGH SULFITE CONTENT AND pH

Jacob Quentin Umberger, Holmdel, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 18, 1969, Ser. No. 843,190
Int. Cl. G03c 7/00
U.S. Cl. 96—55 8 Claims

Silver salt images are rapidly developed in the presence of a color former capable of forming a quinoneimine or azomethine dye, and an aromatic primary amine color developing agent at a pH of 12.5–15.0, and an alkali metal sulfite concentration of 0.15 M to 0.75 M. The process and developer solutions are useful in forming multicolor images in color films and in forming colored radiographic images.

3,627,531

STABILIZING DEVELOPED SILVER HALIDE EMULSIONS WITH HETEROCYCLIC THIOL COMPOUNDS

Fumihiko Nishio, Mitsunori Sugiyama, and Kintaro Nasu, Kanagawa-ken, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa-ken, Japan

No Drawing. Continuation-in-part of application 557,352, June 14, 1966, which is a continuation-in-part of application Ser. No. 218,167, Aug. 20, 1962. This application Aug. 19, 1968, Ser. No. 753,699
Claims priority, application Japan, Dec. 25, 1961, 36/47,119
Int. Cl. G03c 5/38
U.S. Cl. 96—61 2 Claims

By processing a silver halide photographic emulsion layer having developed images in a stabilizing solution containing a silver complex forming agent or a subsequent after-treating solution, which contains a specific thiol compound, such as 2-mercaptoimidazole, the decrease in its density and the discoloration during preservation, caused by the silver complex forming agent remaining in the layer, can be prevented.

3,627,532

PHOTOGRAPHIC ELEMENT INCLUDING A PYRAZOLINE LIGHT SCREENING COLLOID COMPOSITION

Henri Depoorter, Mortsel, Guy Alfred Rillaers, Kontich, Felix Jan Moelants, Wilrijk, and Theofiel Hubert Ghys, Kontich, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

Filed Oct. 9, 1969, Ser. No. 864,977
Claims priority, application Great Britain, Nov. 7, 1963, 52,876/68
Int. Cl. G03c 1/84; F21v 9/00
U.S. Cl. 96—84 12 Claims

Colloid compositions comprising a hydrophilic colloid and a 4-[(2- or 3-pyrrolyl)-methylene]-2-pyrazoline-5-one dye carrying at least one member of the group consisting of carboxyl group and sulpho group in acid or salt form are described. These colloid compositions are useful in light-sensitive photographic elements.

3,627,533

FILM BASE SUCH AS POLYESTER BASE HAVING IMPROVED CORE-SET PROPERTIES AND PHOTOGRAPHIC ELEMENTS

Frederick J. Jacoby and Robert W. Schrader, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 21, 1969, Ser. No. 878,789
Int. Cl. G03c 1/80
U.S. Cl. 96—87 R 9 Claims

Film base having improved "core-set" properties and comprising a base layer (made of material having relatively poor "core-set" properties, such as polyesters) coated on at least one side thereof with a thin layer of a cellulose ester is disclosed. Photographic films having a photosensitive layer applied to a film base of this type are also disclosed.

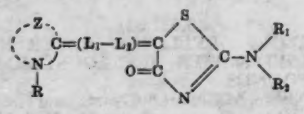
3,627,534

DIRECT POSITIVE PHOTOGRAPHIC EMULSION STABILIZED AGAINST DEVELOPMENT STAIN

Keisuke Shiba, Masanao Hinata, Akira Sato, and Motohiko Tsubota, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed Feb. 20, 1969, Ser. No. 801,180
Claims priority, application Japan, Feb. 21, 1968, 43/10,877
Int. Cl. G03c 1/10
U.S. Cl. 96—135 13 Claims

A direct positive photographic emulsion and light sensitive element having a pre-fogging agent, a silver halide, and containing a merocyanine dye represented by the general formula:



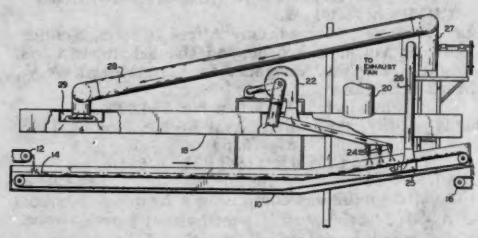
wherein Z represents a group which completes a thiazoline nucleus, an oxazoline nucleus, or pyrroline nucleus; R represents an alkyl group or a substituted alkyl group, L_1 and L_2 each represents a methine group or a substituted methine group; R_1 and R_2 each represents an aryl group; and *n* represents 0, 1 or 2.

3,627,535

METHOD AND APPARATUS FOR REMOVAL OF OIL FROM SURFACE OF FRIED FOOD PRODUCTS

Arthur R. Davidson, West Linn, and John E. Haubner, Tigard, Oreg., assignors to Lamb-Weston, Inc., Portland, Oreg.

Filed July 31, 1969, Ser. No. 846,452
Int. Cl. A23l 1/12
U.S. Cl. 99—1 3 Claims



Oil is removed from surface of food products after cooking in hot oil by subjecting the product to a blast of air saturated with water vapor substantially immediately after removal of the product from the oil and before the product has had a chance to cool substantially.

3,627,536

METHOD OF PRODUCING PROTEINACEOUS FIBERS

Tetsuo Arima, Ikeda, Osaka, and Yoichi Harada, Kawanishi, Hyogo, Japan, assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed Nov. 4, 1968, Ser. No. 773,307
Int. Cl. A23l 1/20
U.S. Cl. 99—17 6 Claims

Proteinaceous fibers useful in the preparation of simulated meat products are formed by the steps of controlling the rate of addition of a coagulating solution to a solution of alginate salt and suspension of protein while it is being rapidly stirred in one rotational direction, adding an acid coagulation-accelerating solution, boiling the coagulated material, and washing the boiled coagulum to remove the unreacted protein, excess coagulating solution and coagulation-accelerating solution.

3,627,537

SOY FOOD PRODUCT

Charles I. Beck, Wayzata, and Patricia D. Cummisford, Minneapolis, Minn., assignors to General Mills, Inc.

No Drawing. Filed Feb. 9, 1970, Ser. No. 9,942
Int. Cl. A23l 1/20
U.S. Cl. 99—98 11 Claims

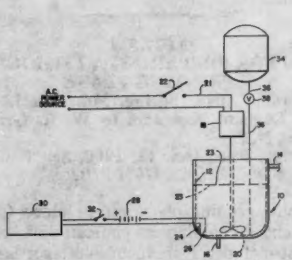
A food product is described which includes a soy material and a flavor modifying agent. The flavor modifying agent may be citrus peel, an extract from citrus peel or a terpene. The flavor modifying agent is used in an amount sufficient to reduce or eliminate the characteristic soy taste of the food product and yet below the level at which the flavor of the agent itself is recognizable.

3,627,538

METHOD OF PRODUCING A SAUSAGE EMULSION

Neil B. Webb, 4019 Glen Laurel Drive 27609; Harris Bradford Craig, 3405 Ocotea St. 27607; and Francis J. Ivey, 905½ W. Peace St. 27605, all of Raleigh, N.C.

Filed June 17, 1969, Ser. No. 834,114
Int. Cl. A22c 11/00
U.S. Cl. 99—109 5 Claims



The resistance to direct current of emulsions having an aqueous protein-containing continuous phase and a fatty discontinuous phase is measured during formation of the emulsion. The measurements of direct current resistance can be made and recorded continuously by insertion

of electrodes into the vessel in which the emulsion is formed. Because the resistance of the emulsion to direct current is related to emulsion stability, a food processor can use the resistance measurements as a process control tool to ensure the formation of stable emulsions.

3,627,539

YEAST CONDIMENT CONTAINING ADDED METHIONINE

Kiyofumi Ishii, Ikeda, Jun Toda, Nishinomiya, and Hisashi Aoki, Suita, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed May 6, 1968, Ser. No. 727,035

Claims priority, application Japan, May 8, 1967, 42/29,065

Int. Cl. A23j *1/18*; A23l *1/22*

U.S. Cl. 99—140 N **8 Claims**

Disagreeable odor and taste characteristic of a yeast condiment such as yeast extract, yeast hydrolyzate, yeast autolyzate are remarkably suppressed, so that flavor of such yeast condiment is considerably improved by incorporating thereinto methionine in an amount to provide from about 1 to 30% by weight relative to the weight on the dry basis of the said yeast condiment.

3,627,540

FLAVORING PROCESSES AND PRODUCTS

Ira Katz, Elberon, Christopher Giacino, Monmouth Beach, Louis J. Strasburger, Elizabeth, and Manfred H. Vock, West Orange, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

No Drawing. Filed Oct. 14, 1969, Ser. No. 866,400

Int. Cl. A23l *1/26*

U.S. Cl. 99—140 R **10 Claims**

Process for imparting a seafood flavor to foodstuffs comprising adding thereto a small amount of 2,4-pentadienal and, if desired, of an oxazoline; as well as flavoring compositions and flavor-enhancing compositions containing such pentadienal and optional oxazoline, and the foodstuffs so obtained.

3,627,541

METHOD OF PACKAGING A FOOD PRODUCT IN A CARTON

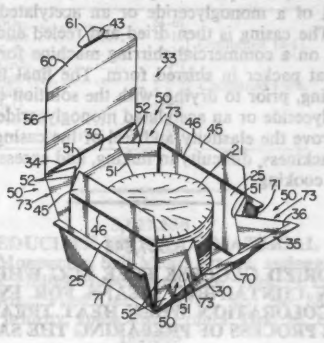
Melville T. Farquhar, Bon Air, Va., assignor to Reynolds Metals Company, Richmond, Va.

Original application Nov. 21, 1968, Ser. No. 777,620. Divided and this application June 12, 1970, Ser. No. 45,616

Int. Cl. B65b *25/06*

U.S. Cl. 99—171 R **3 Claims**

A carton for a food product and blank for making same wherein such carton has a bottom wall, a pair of side walls adjoining opposite side edges of the bottom wall, a pair of end walls adjoining opposite end edges of the bottom wall, and a top wall extending from one of the end walls. The carton also has a plurality of interconnecting walls each interconnecting an end wall and a side wall, each interconnecting wall being folded to define a pair of adjoining overlapped panels with each pair of panels being arranged between an associated end wall and the food product to thereby effectively use the food product to hold the carton assembled, and upon unfastening the top wall and removing the food product



the walls of the carton fall outwardly and the resulting structure defines a serving tray for the food product.

3,627,542

EDIBLE COLLAGEN CASING CONTAINING MONOGLYCERIDE OR ACETYLATED MONOGLYCERIDE SOFTENER

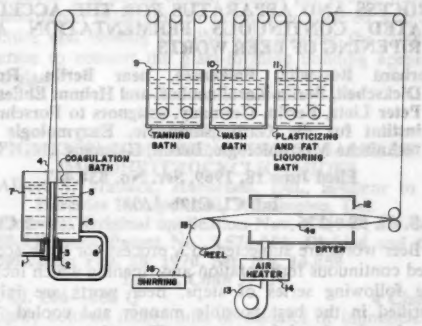
Mauj A. Cohly, Catlin, and James W. Sanner, Danville, Ill., assignors to Tee-Pak Inc., Chicago, Ill.

Filed Oct. 13, 1967, Ser. No. 675,246

The portion of the term of the patent subsequent to May 27, 1986, has been disclaimed

Int. Cl. A22c *13/00*

U.S. Cl. 99—175 **9 Claims**



An edible sausage casing having improved stuffing, linking, and cooking characteristics is prepared from hide collagen. Animal hides are swollen and mechanically unhaired and split to produce a collagen containing corium layer. The corium is ground into fine particles, formed into a slurry and swollen with weak acid to produce an extrudable collagen paste or slurry having a solids content of about 2–6%. The slurry is extruded through an annular die, coagulated with ammonium sulfate or sodium sulfate and tanned or hardened in a bath containing any

suitable non-toxic tanning agent, such as aluminum salts, ferric salts, non-toxic dialdehydes, etc. The tanned casing is washed and finally plasticized using an aqueous solution of glycerin, or equivalent plasticizer, containing a small amount of a monoglyceride or an acetylated monoglyceride. The casing is then dried and reeled and eventually shirred on a commercial shirring machine for delivery to the meat packer in shirred form. The final treatment of the casing, prior to drying, with the solution containing a monoglyceride or an acetylated monoglyceride is effective to improve the elasticity and feel of the casing and eliminates tackiness, difficulty in linking, and excessive splitting during cooking.

3,627,543

PAN DRIED GLUCOSE FREE EGG WHITE ALBUMEN CONTAINING MEANS FOR INHIBITING DISCOLORATION WHEN HEAT TREATED AND THE PROCESS OF PREPARING THE SAME

Jacob J. Epstein, 335 Alden Drive, Addison, Ill. 60101

No Drawing. Continuation-in-part of abandoned application Ser. No. 617,053, Feb. 20, 1967. This application Feb. 18, 1969, Ser. No. 800,257

Int. Cl. A23b *5/00, 5/02*

U.S. Cl. 99—210 **7 Claims**

A pan dried glucose-free egg white albumen containing between 0.035 percent and 0.75 percent aluminum ion by weight on a dry solid basis to preserve the original color of the albumen and inhibit discoloration thereof upon the dried product being subjected to heat treatment to eliminate or substantially reduce the pathogenic organisms therein, such as salmonella and staphylococci, and/or prolonged storage is provided by a process in which glucose is removed from a liquid egg white at an adjusted pH of less than 5.9 and aluminum salt is added to the glucose-free liquid albumen in a concentration sufficient to produce a pan-dried albumen glucose-free egg white containing between 0.035 and 0.75 percent aluminum ion.

3,627,544

PROCESS AND APPARATUS FOR THE ACCELERATED CONTINUOUS FERMENTATION AND RIPENING OF BEER WORTS

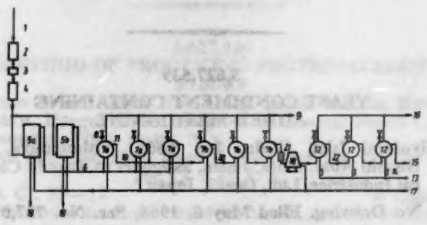
Gerhard Bosewitz, Falkensee, near Berlin, Rudolf Dickscheit, Berlin-Karolinenhof, and Helmut Ehlies and Peter Lietz, Berlin, Germany, assignors to Forschungsinstitut fur die Garungsindustrie, Enzymologie und technische Mikrobiologie, Berlin, Germany

Filed June 18, 1969, Ser. No. 834,447

Int. Cl. C12b *1/02*

U.S. Cl. 99—276 **2 Claims**

Beer worts are subjected to a process for their accelerated continuous fermentation and ripening which includes the following series of steps. Beer worts are initially purified in the best possible manner and cooled. They can be also freed from germs. Then they are saturated with oxygen and are enriched with a predetermined number of yeast cells by a propagation process carried out without pressure or only with small amounts of pressure in containers provided with wort-stirring devices. Then the worts are subjected to a continuous fermentation in a flow system consisting of several steps while being moved under pressure. At the end of the fermentation phase, the fermented and already substantially ripened beer is cooled, for example, in a young beer separator where yeast is removed. It is then possible to continue the further ripening process in a one-step flow line under pressure and a specific gas application so as to separate quickly the exchange substances of yeast cells produced during fermentation until they are all deposited and removed. The once started propa-



gation can be carried out at will either continuously to keep constant the number of yeast cells, or can be discontinuous by returning the yeast only from the young beer separator or from specific containers.

3,627,545

BATH AND PROCESS FOR CHEMICAL METAL PLATING

Glenn O. Mallory, Jr., Inglewood, and Donald W. Baudrand, Temple City, Calif., assignors to Allied Research Products, Inc., Baltimore, Md.

No Drawing. Continuation of abandoned application Ser. No. 833,163, June 13, 1969, which is a continuation-in part of application Ser. No. 804,369, Feb. 26, 1969, which is a continuation-in-part of abandoned application Ser. No. 661,218, Aug. 17, 1967, which in turn is a continuation-in-part of abandoned application Ser. No. 468,921, July 1, 1965. This application June 5, 1970, Ser. No. 41,784.

Int. Cl. C23c *3/02*

U.S. Cl. 106—1 **5 Claims**

A bath for plating a material with a transition metal selected from the class consisting of nickel, cobalt, iron and chromium by chemical deposition which comprises an aqueous solution of a coordination compound of the transition metal with a saturated short chain carboxylic acid having 1–6 carbon atoms and the hydroxy derivatives of the acid, a ligand complexing agent selected from the group of pyrophosphoric acid, ascorbic acid, erythorbic acid, the water-soluble salts thereof and their mixtures, and a transition metal reducing agent. The bath has a pH ranging from 1–14 and contains less than about 3400 p.p.m. of chloride and/or sulfate anions. When the material being plated is bismuth, cadmium, tin, lead or zinc, the bath contains less than 1000 p.p.m. of these anions.

3,627,546

MARKING COMPOSITION

Leonard T. Coppeta, North Andover, Mass., assignor to The Carter's Ink Company, Cambridge, Mass.

No Drawing. Continuation-in-part of abandoned application Ser. No. 395,570, Sept. 10, 1964. This application Oct. 23, 1968, Ser. No. 770,111

Int. Cl. C09d *11/00, 13/00*

U.S. Cl. 106—19 **1 Claim**

A disappearing solid marking composition, useful for crayons or the like or for transfer coatings, may be

formed from an acid base indicator which is colored in the basic state, sodium metasilical nonahydrate, and a hydrophilic wax carrier. The composition is stable to atmospheric exposure, and forms a mark which disappears irreversibly.

3,627,547

HIGH ALUMINA BODIES COMPRISING ANORTHITE, GEHLENITE AND SPINEL

Joseph T. Bailey, Hixson, Tenn., assignor to American Lava Corporation, Chattanooga, Tenn.

Continuation-in-part of application Ser. No. 831,911, June 10, 1969. This application June 19, 1969, Ser. No. 834,803

Int. Cl. C04b *33/00*

U.S. Cl. 106— 39 R **5 Claims**

Frits containing 80–97% Al_2O_3 which mature to useful ceramics at about 1350° to 1500° C. are provided. Prereaction of finely divided reactive Al_2O_3 with SiO_2 and CaO in ratios of about 5:1 to 3:5 (optionally up to a total of ⅓ of the oxides other than Al_2O_3 being MgO) provides the unique family of frits MgO and CaO and may be employed as carbonates.

3,627,548

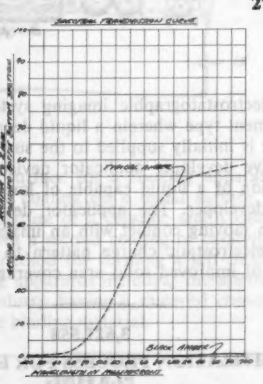
DARK AMBER GLASSES AND PROCESS

Friedrich W. Hammer and John Jasinski, Toledo, Ohio, assignors to Owens-Illinois, Inc.

Continuation-in-part of application Ser. No. 485,605, Sept. 7, 1965. This application Jan. 11, 1968, Ser. No. 697,169

Int. Cl. C03c *3/34, 5/02, 15/00*

U.S. Cl. 106—52 **27 Claims**



New dark or "black" amber glass compositions prepared from reduced amber base glasses to which is added copper oxide. The new glasses are characterized by extremely low brightness levels, for example, on the order of 5% or less in a 2 mm. thickness, whereby glass articles made therefrom visually appear black, hence the name "black amber" glasses. The copper oxide may be added to a melt of a base amber glass under appropriate conditions.

3,627,549

BARIUM SILICATE GLASS FOR TELEVISION DISPLAY CATHODE-RAY TUBES

Coenraad Maria La Grouw, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

No Drawing. Filed Sept. 10, 1969, Ser. No. 856,804

Claims priority, application Netherlands, Sept. 14, 1968, 6813195

Int. Cl. C03c *3/04*

U.S. Cl. 106—52 **2 Claims**

Glass for envelopes of cathode-ray tubes for television display, particularly screen glass or colour television, which transmits at most 0.5 mr./h. of X-ray radiation at an acceleration voltage of 35 kv., and which has the following composition in percent by weight:

SiO_2	54–61	
Na_2O	6–10	Combined 13–17.
K_2O	4–10	
Al_2O_3	3–7	
MgO	0–1.5	Combined 1–3.5.
CaO	0.5–2.5	
BaO	17–21	
CeO_2	0.05–0.3	
$As_2O_3+Sb_2O_3$	0.3–0.7	

3,627,550

REDUCIBLE VITREOUS MATERIAL

Marc Monneraye, Sait Maur, France, assignor to U.S. Philips Corporation, New York, N.Y.

No Drawing. Filed Dec. 12, 1969, Ser. No. 884,691

Claims priority, application France, Dec. 30, 1968, 182,085

Int. Cl. C03c *3/04, 3/10, 5/02*

U.S. Cl. 106—53 **1 Claim**

A reducible vitreous material comprising lead oxide, bismuth oxide, SiO_2 and Al_2O_3, which after adjustment of the surface conductivity between 10^{11} and 10^{13} ohms per square by heating in a reducing atmosphere, is particularly suitable for use in a dynode.

3,627,551

FORMS OF GRAPHITE

Franciszek Olstowski, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Mar. 22, 1965, Ser. No. 441,905, now Patent No. 3,492,197, dated Jan. 27, 1970. Divided and this application Nov. 12, 1968, Ser. No. 775,096

Int. Cl. C09d *1/46;* H01b *1/06*

U.S. Cl. 106—56 **4 Claims**

This invention relates to new glass-bonded compressed graphite compositions and to a method for preparing such compositions. Glass-bonded compressed graphite compositions are prepared by admixing vermicular expanded graphite with about 2 to about 35 weight percent of an inorganic vitreous glass-forming composition, as a bonding agent, compressing the admixture under pressure of from about 5 to about 50,000 pounds per square inch in predetermined directions to produce a cohered graphite structure and heating or otherwise treating the cohered structure to convert the glass-forming bonding agent to fused glass.

3,627,552

PIGMENTS COMPRISING NICKEL SALTS OF IMINOHETEROCYCLICAMIDES

Albert S. Matlack, Hackessin, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Original application Nov. 2, 1967, Ser. No. 680,037, now Patent No. 3,576,012. Divided and this application Feb. 18, 1970, Ser. No. 14,859

Int. Cl. C08h *17/14*

U.S. Cl. 106—288 Q **4 Claims**

Highly colored nickel salts or chelates of iminoheterocyclic carboxamides or carbothiamides suitable as pigments are described. The nickel salts are prepared by reacting a nickel salt of a weak acid with the desired iminoheterocyclic carboxamide or carbothiamide, as for example, with 2-iminocoumarin-3 carboxamide, which in turn can be preformed or formed in situ by condensing the appropriate aldehyde with a cyanoacetamide or cyanothioacetamide. Pigmentary mixed chelates are also formed in the same manner by reacting the nickel salt with a mixture of the desired iminoheterocyclic carboxamide or carbothiamide and at least one other chelating agent such as, for example, dimethylglyoxime, 1-nitroso-2- naphthol, etc.

3,627,553

PIGMENTS

David William Harold Clark, Leigh-on-Sea, Essex, and Terence Leslie Threlfall, London, England, assignors to May & Baker Limited, Dagenham, Essex, England

Filed Sept. 6, 1968, Ser. No. 758,056

Claims priority, application Great Britain, Sept. 8, 1967, 41,182/67

Int. Cl. C09c *1/36*

U.S. Cl. 106—300 26 Claims

The invention provides novel pigments comprising a plurality of high refractive index layers of titanium or zirconium dioxide or of an alkaline earth metal titanate separated by one or more layers of lower refractive index of an organic film-forming substance or of an inorganic oxide or hydroxide. These pigments are made by successively depositing the various layers on a support, stripping the product from the support and comminuting it.

3,627,554

READILY DISPERSIBLE INORGANIC PIGMENTS

August Bockmann and Klaus Prater, Krefeld, Hans Rudolph, Krefeld-Bockum, and Wolfgang Wiegreffe, Krefeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 9, 1969, Ser. No. 840,473

Claims priority, application Germany, July 20, 1968, P 17 92 086.4

Int. Cl. C09c *1/36, 3/02*

U.S. Cl. 106—300 10 Claims

The dispersibility of inorganic pigments in, for example, resins, e.g. polyvinyl chloride, is improved by coating the pigment particles with an ether of a polyol with a least 3 OH-groups and a monofunctional alcohol.

3,627,555

FEEDING OF POWDERS

Richard E. Driscoll, Monroe, La., assignor to Columbian Carbon Company, New York, N.Y.

Filed Sept. 10, 1968, Ser. No. 758,880

Int. Cl. C09c *1/48*

U.S. Cl. 106—307 5 Claims

Constant mass-rate feeding of powders is improved by supplying the powder to a feeder in fluid form, and at a uniform bulk density, from a bed of the powder. The depth of the powder bed is maintained essentially constant, thus providing a more constant head of pressure upon the powder being supplied to the feeder.

3,627,556

DURABLE PRESS FINISH FOR WOOL/CELLULOSIC FABRICS (MELAMINE/DIHYDROXY-IMIDAZOLIDINONE RESINS)

Philip B. Roth, Bridgewater Township, Somerset County, N.J., and Herbert Jack Leavitt, Millbrae, Calif.; said Roth assignor to Koratron Company, Incorporated, San Francisco, Calif.

No Drawing. Filed July 29, 1968, Ser. No. 748,174

Int. Cl. D06m *15/54, 15/70*

U.S. Cl. 117—10 20 Claims

A method for imparting durable press properties to textile fabrics containing a protein fiber such as wool and cellulose fibers comprising impregnating said fabric with a single bath comprising a resin forming material which may comprise a combination of materials, i.e., a polymethylol melamine and 1,3-dialkylol-4,5-dihydroxy-2-imidazolidinone and a delayed action catalyst, drying and subsequently curing said methylol melamine and 1,3-dialkylol-4,5-dihydroxy-2-imidazolidinone on said fabric, the composition for the method and the treated fabric.

3,627,557

LIQUID DEVELOPMENT BY REDUCING THE VISCOSITY OF THE DEVELOPER ON A ROLLER APPLICATOR PRIOR TO DEVELOPMENT

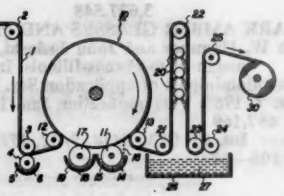
Masamichi Sato and Seiji Matsumoto, Asaka, Japan, assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 21, 1970, Ser. No. 65,915

Claims priority, application Japan, Aug. 27, 1969, 44/67,749

Int. Cl. G03g *13/10, 15/10*

U.S. Cl. 117—37 LE 10 Claims



An electrostatographic imaging system of the liquid development type wherein a liquid developer of elevated viscosity is initially supplied to the surface of an electroconductive developer applicator device followed by the application of a liquid capable of lowering the viscosity of the developer. The applicator device is then maintained in moving contact with an imaging member bearing an electrostatic charge pattern to provide a reproduction of improved solid area coverage.

3,627,558

SENSITIZATION PROCESS FOR ELECTROLESS PLATING

Lenard Lee Roger, Camberley, Russell Swale Vincent, Aldbourne, and Harry Wilson, Sandhurst, England, assignors to Technograph Printed Circuits Limited

No Drawing. Filed Nov. 27, 1968, Ser. No. 779,590

Int. Cl. B44d *1/18;* C23c *3/00*

U.S. Cl. 117—47 R 12 Claims

Method of, and compositions for, sensitising surfaces prior to electroless plating of a metal thereon. The compositions are stabilised by a water-soluble hydroxyl group-containing compound.

3,627,559

MULTI-PURPOSE ADHESIVE TAPE

James Ling Chen, East Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

Filed June 17, 1969, Ser. No. 833,946

Int. Cl. B44d *1/10, 1/12, 1/14*

U.S. Cl. 117—45 6 Claims

A multi-purpose adhesive tape is formed by a backing, a layer of a water soluble gum, and a discontinuous layer

of a pressure-sensitive adhesive on the gum. When applied to a dry substrate, the tape becomes peelable or releasable

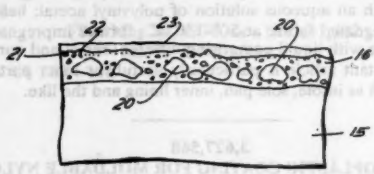
on being moistened. When applied to a wet substrate, the tape is resistant to peeling or releasing on being moistened.

3,627,560

SELF-CLEANING COOKING APPARATUS

Curtis L. Morgan, Sigel, Ill., assignor to Fedders Corporation, Edison, N.J.

Original application Jan. 13, 1969, Ser. No. 790,772, now Patent No. 3,545,423, dated Dec. 8, 1970. Divided and this application Apr. 27, 1970, Ser. No. 43,266
Int. Cl. A21b *1/00*
U.S. Cl. 117—70 B 6 Claims



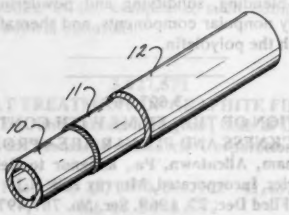
A self-cleaning surface for a cooking apparatus comprising a two-layer coating on a metal surface, the first coating being a mixture of a ceramic and a catalytically active material with a second coating of catalytically active material. A method for forming a self-cleaning surface for a cooking apparatus including the application of the catalyst in a slurry having a material convertible to a high temperature binding material.

3,627,561

PROCESS FOR BONDING PLATINUM ONTO A BASE METAL

Raymond S. Richards, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Original application July 16, 1965, Ser. No. 472,417, now Patent No. 3,432,278, dated Mar. 11, 1969. Divided and this application Oct. 16, 1968, Ser. No. 767,946
Int. Cl. B44d *1/08, 1/14, 1/16;* C23c *7/00*
U.S. Cl. 117—71 M 9 Claims



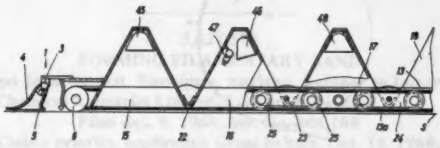
There is disclosed a process of metallurgically bonding a platinum coating to a base metal by applying to the base metal an easily reduced metal which will not oxidize and thereafter applying molten platinum in droplet form onto the reduced metal. The contemplated base metals include iron or nickel base alloys such as Inconel, Nichrome, and the like. The contemplated reduced metal is gold, silver, or copper. The application of the molten platinum in droplet form may be by a flame-spray or plasma-jet spray technique.

3,627,562

METHOD OF TREATING CONTINUOUS SURFACES

Paul Hammelmann, 17 Zum Sundern, 474 Oelde, Westphalia, Germany

Filed May 19, 1969, Ser. No. 828,428
Claims priority, application Germany, May 20, 1968, P 17 56 431.7
Int. Cl. B44d *1/02, 1/12, 1/50*
U.S. Cl. 117—61 5 Claims



A continuous surface is treated by advancing over it an apparatus provided at its leading end with a cleaning device and downstream of the cleaning device with one or more containers which are evacuated and each have an open side facing the just-cleaned surface portion in sealing engagement therewith and carrying in its interior a drying and/or applicator device for applying a protective layer to the just-cleaned surface portion.

3,627,563

FLEXIBLE TRANSLUCENT COATING FILMS FOR DRAFTING PURPOSES

Romain Henri Bollen, Hove, and Willy Karel van Landeghem, Sint-Gillis-Waas, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

No Drawing. Filed Mar. 28, 1969, Ser. No. 813,401
Claims priority, application Great Britain, Feb. 11, 1967, 7,391/69
Int. Cl. B44d *5/02, 5/04*
U.S. Cl. 117—62 21 Claims

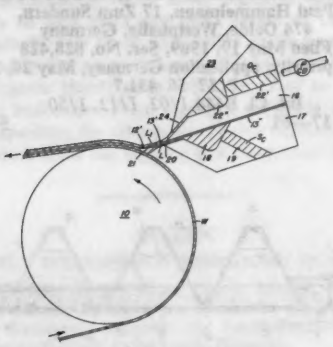
A dimensionally stable drafting film which has good pencil and ink receptivity and is easily erasable without leaving erasure marks comprising (1) a dimensionally stable polyester film substrate and (2) a mat layer containing pigment particles uniformly coated over said support is described. The mat layer consists essentially of the moiety of a binder combination including a soluble, partially cured formaldehyde resin; a diisocyanate modified polyester or polyesteramide, finely divided hard pigment particles, and a hydrophilic component. The moiety is formed by heating an admixture of said binder combination in the presence of an acid cross-linking catalyst for the formaldehyde resin and diisocyanate modified polyester or polyesteramide at an elevated temperature for a time sufficient to polymerize the resin combination. The mat layer is to have a thickness substantially equal to the average diameter of the pigment particles with the particles being present in the layer in an amount sufficient to constitute from about 30 to 50 percent by weight of the total weight of the dried mat layer.

3,627,564

METHOD FOR COATING A CONTINUOUS WEB

Joseph A. Mercier, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 16, 1970, Ser. No. 55,323
Int. Cl. B44d *1/14, 1/02*
U.S. Cl. 117—69 2 Claims



Two or more low-coverage coatings are applied substantially simultaneously to a web travelling at high speed by first trowelling a very thin subcoat onto the web with a trailing blade coater to prepare the web surface for an overcoating of the same or compatible coating material, and then flowing the overcoat down the top side of the trailing blade and off the trowelling end thereof directly onto the subcoat. Two or more layers of fluid coating composition can be flowed down the top of the trailing blade and onto the trowelled subcoat in distinct layer relationship with each other and the subcoat.

3,627,565

MIXTURES OF ZIRCONYL SALTS AND TRIALKOXYSILYLPROPYLAMINES AS COUPLING AGENTS

Edwin P. Plueddemann, c/o Dow Corning Corp., Midland, Mich.

Filed Aug. 8, 1969, Ser. No. 848,731
Int. Cl. C03c *25/02;* B32b *17/04*
U.S. Cl. 117—72 7 Claims

The bond strength between solid inorganic materials, such as glass, and certain organic resins, such as epoxies, is strengthened by treatment of the solid with a mixture of a water soluble zirconyl salt and a gamma-trialkoxysilylpropylamine prior to the formation of the bond.

3,627,566

FLOOR COVERING WITH SKID-PROOF UNDERCOATING

Gunter Stichter, Frankensteiner Strasse 119, 61 Darmstadt-Eberstadt; Josef Sulo, Obermainstrasse 21, 6 Frankfurt am Main, and Manfred Schweizer, Friedrich-Ebert-Strasse 32, 6101 Gross-Bieberau, all of Germany

Filed Nov. 16, 1967, Ser. No. 683,453
Claims priority, application Germany, Nov. 17, 1966, C 40718
Int. Cl. B32b *27/20, 27/32*
U.S. Cl. 117—76 A 8 Claims

A floor covering with a skid-proof underside consisting of a mixture of atactic polypropylene and filler.

3,627,567

LEATHERLIKE MATERIAL AND PROCESS OF MAKING SAME

Tomio Tensho, Osaka, Japan, assignor to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

Filed July 23, 1969, Ser. No. 843,990
Claims priority, application Japan, July 23, 1968, 43/52824
Int. Cl. B44c *3/02;* B44d *1/14;* D06n *3/04*
U.S. Cl. 117—76 T 27 Claims

This invention is directed to a tenacious and moisture permeable leatherlike sheet material having breatheability and water absorbability and which is comparable to natural leathers in durability and wearing comfort. It comprises: a base fabric having a large content of its void spaces; a microporous and aqueous insoluble polyvinyl acetal resin, adhering to and entirely covering the structural fibers of said fabric, in the form of a unitary three dimensional network; and a layer of a different resin covering said polyvinyl acetal resin. The sheet material may have a grain side layer on at least one surface side thereof. A process for manufacturing such a sheet material comprises steps of: impregnating a base fabric with an aqueous solution of polyvinyl acetal; heating the impregnated fabric at 50°–130° C.; further impregnating said fabric with liquid comprising different resin; and curing. The resultant article is particularly useful for inner parts of shoe, such as insole, sole pad, inner lining and the like.

3,627,568

THERMOPLASTIC COATING FOR MOLDABLE NYLON CARPETS, AND METHOD OF MANUFACTURE

John W. Padgett, Bernardsville, and Sherman T. Van Esselstyn, Upper Montclair, both of N.J., assignors to Moore & Munger, New York, N.Y.

Filed July 17, 1967, Ser. No. 653,625
Int. Cl. B44d *1/094;* B32b *27/08*
U.S. Cl. 117—21 15 Claims

A normally granular free-flowing thermoplastic composition for coating moldable nylon carpets which comprises a major proportion of a relatively high-viscosity polyolefin, such as polyethylene, and a minor proportion of a mixture of relatively polar and relatively nonpolar lower viscosity polymers or saturated hydrocarbons, such as, respectively, ethylene vinyl acetate and Fischer-Tropsch wax, the polyolefin having a density of between about 0.900 and .940 and a melt index of 70 or less, and the mixture of polar and relatively nonpolar hydrocarbons having, when taken together, a melting point of not less than 190° F. and a viscosity at 125° C. not exceeding 1000 centipoises.

Also, nylon carpeting which has been at least partially coated or impregnated, as by fluxing, with such a composition.

Also, a process for preparing such a composition which includes melt-blending, solidifying and powdering the polar and relatively nonpolar components, and thereafter dry-mixing these with the polyolefin.

3,627,569

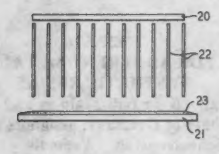
DEPOSITION OF THIN FILMS WITH CONTROLLED THICKNESS AND PLANAR AREA PROFILE

David Beecham, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 27, 1968, Ser. No. 787,497
Int. Cl. C23c *11/00*
U.S. Cl. 117—106 R 8 Claims

The specification describes a method and apparatus for vapor deposition of thin films in which the thickness profile

and planar area of the film is highly controlled through the use of a collimating device. The collimating device consists of a plurality of elongated open-ended passages for "channeling" the evaporant between the source and the substrate. This produces an even distribution of vapor and high



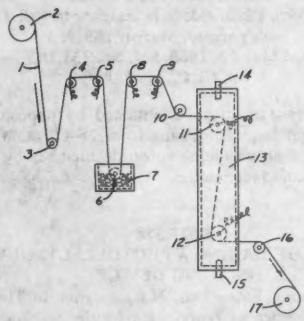
directivity as the depositing material reaches the substrate. The invention is especially suitable for the production of large area films applicable, for instance, to large piezoelectric transducers. The invention is also applicable to the production of films to any given thickness profile.

3,627,570

HEAT TREATMENT OF GRAPHITE FIBERS

Robert A. Cass, and Samuel Steingiser, both of Dayton, Ohio, assignors to Monsanto Research Corporation, St. Louis, Mo.

Filed May 28, 1970, Ser. No. 41,412
Int. Cl. B44d *5/12, 5/00*
U.S. Cl. 117—118 **6 Claims**



A process for improving the shear strength of a graphite fiber-resin matrix wherein the fibers are coated with a soluble coating compound consisting of a metal hydroxide, peroxide, halide, nitrate, nitrite, permanganate, dichromate or sulfide, and heated in a controlled atmosphere at above 400° C. prior to incorporation in the composite; such composites being useful as structural materials.

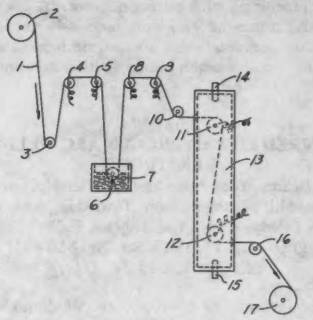
3,627,571

HEAT TREATMENT OF GRAPHITE FIBERS

Robert A. Cass, and Samuel Steingiser, both of Dayton, Ohio, assignors to Monsanto Research Corporation, St. Louis, Mo.

Filed May 28, 1970, Ser. No. 41,481
Int. Cl. B44d *5/12*
U.S. Cl. 117—118 **3 Claims**

A process for improving the shear strength of a graphite fiber-resin matrix composite wherein the fibers are coated with a catalyst and are heat-treated in a halogen-containing



atmosphere at a temperature above 300° C.; such composites being useful as structural materials.

3,627,572

FORMING FILAMENTARY BAND

Nigel John Barnett, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 6, 1969, Ser. No. 864,188
Claims priority, application Great Britain, Oct. 16, 1968, 49,098/68
Int. Cl. B32b *5/12, 31/12*
U.S. Cl. 117—126 **6 Claims**

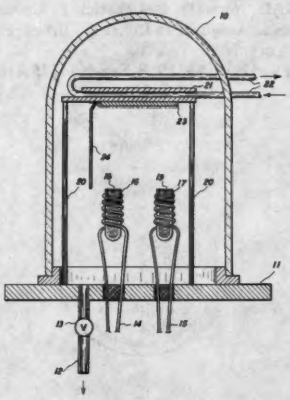
Band structures comprising a core of parallel filaments and an extruded exterior sheath of thermoplastic organic material and process for their production including the step of compaction of the core by means of a reduced atmospheric pressure.

3,627,573

COMPOSITION AND METHOD

John C. Schottmiller, 38 Alberta Drive, Penfield, N.Y.; Francis W. Ryan, 77 Pembroke St., Rochester, N.Y., and Charles Wood, 1034 DeKalb Ave., Sycamore, Ill.

Continuation-in-part of application Ser. No. 550,215, May 16, 1966, now abandoned. This application Oct. 10, 1967, Ser. No. 674,267
Int. Cl. H01l *7/36*
U.S. Cl. 117—201 **11 Claims**



This invention relates to a vitreous semiconductor comprising at least one metal and at least one nonmetal which is solid at room temperature, the semiconductor having at least

0.5 atomic percent metal and a greater than stoichiometric percentage of nonmetal. The invention also relates to a method for producing such semiconductors by coevaporating the metal and nonmetal and simultaneously quenching said metal and said nonmetal onto a substrate held at a temperature below the condensation point of either component.

3,627,574

COVERED LOW HYDROGEN ARC WELDING ELECTRODE

William T. Delong, West Manchester Township, and Edwin R. Szumachowski, Springettsbury Township, both of Pa., assignors to Teledyne, Inc., Los Angeles, Calif.

Filed Aug. 15, 1969, Ser. No. 850,631
Int. Cl. B23k *35/24, 35/34*
U.S. Cl. 117—205 **18 Claims**

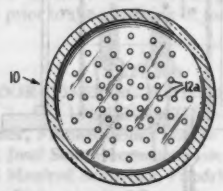
A covered ferrous low hydrogen arc welding electrode of the class wherein a current conductive core is covered with a lime-fluoride coating, the electrode containing by weight about 45 percent to about 80 percent core and about 20 percent to about 55 percent coating, the coating containing by weight of the electrode 0 to about 30 percent alloying metal powder, about 2 percent to about 7 percent deoxidizer metal powder, about 4 percent to about 15 percent metal fluoride, about 5 percent to about 15 percent alkaline earth carbonate, 0 to about 10 percent slag builder and modifier and about 0.5 percent to about 8 percent inorganic binder material, the electrode producing a nonaustenitic steel weld metal deposit characterized by superior toughness in the Charpy V-notch impact test, the electrode containing base components selected from metallic and oxide forms of basic metals of the group consisting of lithium, sodium, potassium, cesium, magnesium, calcium, strontium and barium and acid components selected from metallic and oxide forms of acid metals of the group consisting of aluminum and silicon, said base components and acid components being so proportioned that when all components are melted together under the influence of an electric welding arc the electrode produces a welding slag with a basicity or mole ratio of oxide of basic metal to oxide of acid metal of at least 2.2, the electrode being restricted in sources of metallic and oxide forms of titanium so that when all components are melted together under the influence of an electric welding arc the electrode produces a weld metal deposit containing less than 0.07 percent titanium.

3,627,575

PROCESS FOR FORMING PHOTOEMISSIVE SURFACES

Robert J. Doyle, Norwalk, and Patrick F. Grosso, Stamford, both of Conn., assignors to Columbia Broadcasting System, Inc., New York, N.Y.

Filed Nov. 13, 1968, Ser. No. 775,418
Int. Cl. B44d *1/18*
U.S. Cl. 117—212 **11 Claims**



Photoemitters are formed on selected areas of a substrate or on a normally inaccessible substrate by coating the selected areas or substrate with a layer of a nucleating material having a higher heat of sublimation than the photoemitter base layer (e.g., nichrome if the latter base layer is antimony). The substrate with the selected nucleated areas thereon is sealed into an evacuated envelope and is baked out to remove foreign gases. Antimony is then evaporated inside or caused to diffuse into the envelope at an elevated temperature such that it is deposited only on the nucleated surfaces. An alkali metal (e.g., caesium) is then evaporated within the envelope and it adheres only to the areas where the antimony has previously been deposited, forming photoemitters on the selected area or areas on the substrate.

3,627,576

PROCESS FOR ADHERENT METALLIZING OF SYNTHETIC RESINS

Helmut Knorre, Hainstadt/Main, and Gunter Reiff, Kleinosthein, both of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler, Frankfurt/Main, Germany

Filed Aug. 19, 1968, Ser. No. 753,780
Claims priority, application Germany, Aug. 18, 1967, P 16 21 232.1
Int. Cl. B44d *1/40;* **C23b** *5/62*
U.S. Cl. 117—213 **10 Claims**

Synthetic resins having adherent electrically conductive metal coatings on their surfaces are produced by preparing the synthetic resin A to be metallized by incorporating therein (1) a polymeric material having a relatively low softening temperature range and which is capable of being attacked oxidatively by the usual conditioning baths, such as, chromosulfuric acid, and (2) a finely divided filler which is capable of binding the catalyst required through functional groups and effecting chemical metallization of the thus prepared combination.

3,627,577

THIN FILM RESISTORS

Charles A. Steidel, Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 22, 1968, Ser. No. 731,183
Int. Cl. C23c *15/00*
U.S. Cl. 117—227 **3 Claims**

Thin film resistors may be obtained by depositing tantalum-aluminum films containing from 25–60 atom percent aluminum upon an insulating substrate member by conventional condensation techniques.

3,627,578

METHOD OF MAKING A PHOTOELECTROLYTIC IMAGING DEVICE

Harvey A. Hodes, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 5, 1969, Ser. No. 874,388
Int. Cl. G03g *5/10*
U.S. Cl. 117—230 **1 Claim**

In the manufacture of a photoelectrolytic imaging device, an aqueous suspension is formed of all the ingredients making up the image forming layer. The aqueous suspension is then spread evenly over an electrically conductive support for the image forming layer and a photoconductive layer then placed in contact with the aqueous suspension layer.

3,627,579

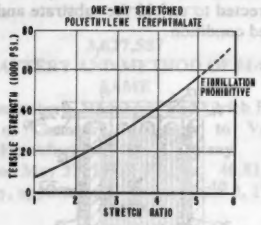
UNIDIRECTIONALLY ORIENTED FILM STRUCTURE OF POLYETHYLENE TEREPHTHALATE

Carl John Heffelfinger, Circleville, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 707,907, Jan. 9, 1968, now abandoned, Continuation-in-part of application Ser. No. 470,992, July 12, 1965, now abandoned. This application Nov. 18, 1969, Ser. No. 877,755
Int. Cl. H01f *10/00;* **C09j** *7/02;* **C08g** *17/04*
U.S. Cl. 117—236 **7 Claims**

A tear-resistant, nonfibrillating and dimensionally stabilized film structure of polyethylene terephthalate, which is

useful as a backing for metallic, magnetic, and adhesive coatings, having an intrinsic viscosity of at least 0.65 and



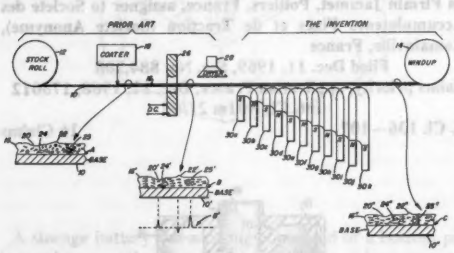
which is stretch oriented unidirectionally and a process of preparation thereof.

3,627,580

MANUFACTURE OF MAGNETICALLY SENSITIZED WEBS

Harry J. Krall, San Jose, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 24, 1969, Ser. No. 801,409
Int. Cl. H01f 7/00
U.S. Cl. 117—238 **8 Claims**



The requirement for time-consuming, costly bulk-erasing of the magnetic sound track on motion picture film is eliminated in the disclosed process. As indicated, film is coated with a magnetically sensitized stripe. Prior to the time when the stripe dries, the film is exposed to a strong particle-orienting magnetic field, thereby to improve the recordability of the stripe. Such particle orientation causes the particles to become unidirectionally magnetized, which in combination with coating irregularities increases measurable noise level. To remove such noise, the invention provides that the film be exposed to alternating magnetic fields of gradually decreasing strength, such fields being disposed after the coating dries and before the film is wound. The invention may be practiced in the manufacture of other magnetically sensitized recording webs.

3,627,581

PRESSURE-SENSITIVE RECORD MATERIAL

Paul S. Phillips, Jr., Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Oct. 19, 1970, Ser. No. 82,198
Int. Cl. B41m 5/16
U.S. Cl. 117—36.2 **14 Claims**

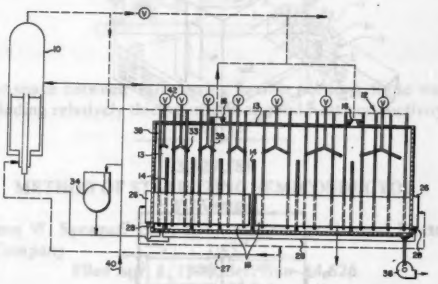
Record material comprising paper sheet material coated with liquid-containing microcapsules wherein the liquid contents comprise isopropylbiphenyl and no halogenated hydrocarbon liquid. Said liquid is associated on the record material with at least two color-producing reactants, at least one of which is soluble in said liquid. The encapsulated liquid is associated with the reactants by either being in close proximity to both reactants or by having one of the reactants dissolved therein and being in close proximity to the other. Of the color-producing reactants, one is a chromogenic dye-precursor and one is a coreactant material capable of developing the color of the chromogenic dye-precursor when the two reactants are brought into reaction contact by rupture of the capsule walls that contain said liquid.

3,627,582

CONTINUOUS CRYSTALLIZING APPARATUS FOR SUGAR-BEARING LIQUOR

Francis Dambrine, Marcq en Baroeul; Jean C. Giorgi, Hellemmes; Jacques De Cremoux, Lille, and Georges Windal, Roubaix, all of France, assignors to Fives Lille-Cail, Paris, France

Filed June 19, 1969, Ser. No. 834,629
Claims priority, application France, July 17, 1968, 159451
Int. Cl. C13f 1/02; C13g 1/00, 1/04
U.S. Cl. 127—16 **10 Claims**



A crystallizer for sugar has a shell which is approximately cylindrical about a horizontal axis, and symmetrical relative to a vertical plane through the axis. A group of plate-shaped heating elements in the shell define a horizontal plane which upwardly bounds the group and divides the interior of the shell into a top portion and a bottom portion. The numerical value of the combined surface area in square meters of the heating elements which are upright and parallel to the axis is 13 to 20 times the numerical value of the capacity of the bottom portion in cubic meters, and the capacity of the bottom portion is 0.2 to 0.35 times the total capacity of the shell. The bottom portion is axially divided into compartments by partitions transverse to the axis.

3,627,583

DIRECT COMPRESSION VEHICLES

John P. Troy, Hicksville; Anthony Monti, Irvington; Frank J. Lynch, Staten Island, all of N.Y., and Charles B. Broeg, Short Hills, N.J., assignors to SuCrest Corporation, New York, N.Y.

Filed Apr. 29, 1969, Ser. No. 820,285
Int. Cl. C13f 3/00
U.S. Cl. 127—29 **10 Claims**

Tablets are formed directly without granulation or slugging from a mixture of an active material, such as a therapeutic material, and as a direct compression vehicle, a dry, free-flowing, granular sugar composition comprising generally spherical, porous, firm agglomerates of 100 parts of solid sugar in from about 0.1 to about 30 parts of a cementum or matrix. The sugar agglomerates are obtained by:

1. Spraying a particulate solid sugar with an aqueous solution of binder;

2. Providing the resulting mixture with sufficient high intensity agitation to uniformly intermingle the sugar and binder and to build up agglomerates of a desired size;

3. "Snowballing" the agglomerates to impart a general spherical shape thereto and to firm or densify the agglomerate;

4. Drying; and if necessary,

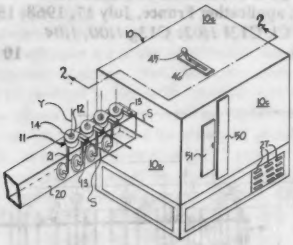
5. Separating over- and undersized agglomerates. The mixture may also contain additives such as colors, flavorants and the like.

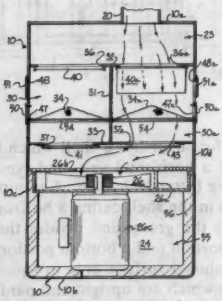
3,627,584

METHOD FOR PNEUMATICALLY CLEANING OPEN-END SPINNING MACHINES

Richard Gordon Stewart, Heaton Mersey, Manchester, England, assignor to Parks-Cramer (Great Britain), Ltd., Oldham, England

Filed June 10, 1969, Ser. No. 831,915
Int. Cl. B08b 5/04
U.S. Cl. 134—21 5 Claims





This invention is directed to the cleaning of the spinning heads or units of open-end spinning machines, and the apparatus for carrying out the instant method includes means for maintaining a substantially constant high-pressure suction airstream at a plurality of open-end spinning units while alternately filtering the airstream through a pair of generally parallel filter-containing airflow chambers in advance of a high-pressure suction fan whereby fiber waste may be removed from each chamber and its filter while the airstream flows through the other chamber without reducing the efficiency of the airflow at the spinning units as effected by the fan.

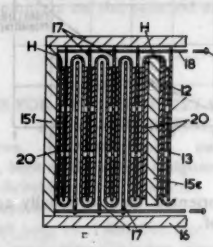
3,627,585

SOLAR CELL ARRAYS

Alan Albert Dollery, Windlesham, Surrey; Neville Stanley Reed, Farnham, Surrey, and Frederick Christopher Treble, Farnborough, all of England, assignors to Minister of Technology in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Apr. 3, 1969, Ser. No. 813,123
Claims priority, application Great Britain, Oct. 14, 1968, 48,483/68
Int. Cl. H01l
U.S. Cl. 136—89 6 Claims

According to the present invention a stowable solar cell array includes solar cells mounted on a thin flexible substrate which is supported on an erectable frame, the frame and substrate being arranged so that in the stowed condition with the frame collapsed the substrate is held in flat concertinalike folds, and frame erection means whereby the frame is capable of being erected to unfold the substrate and support it in a fully deployed condition.



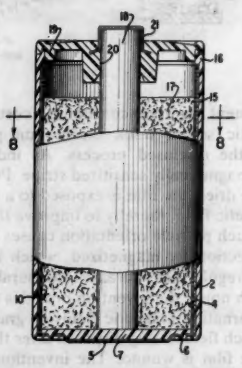
The erectable frame may include a telescopic tube having several sections slidably arranged one inside the other, and the frame erection means conveniently may be means for releasing a compressed gas into the interior of the telescopic tube to extend it and deploy the sections of the tube.

3,627,586

SEALED CYLINDRICAL ELECTROCHEMICAL CELL

Jean Firmin Jammet, Poitiers, France, assignor to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme), Romainville, France

Filed Dec. 11, 1969, Ser. No. 884,208
Claims priority, application France, Dec. 12, 1968, 178012
Int. Cl. H01m 21/06
U.S. Cl. 136—107 16 Claims



Sealed electrochemical cells, preferably of cylindrical shape comprising a rodlike positive electrode surrounded by a depolarizing mix and separator enclosed within an overall cylindrically shaped cuplike negative electrode formed from sheet metal which is mechanically folded and bowed to provide a bottom and cylindrically shaped side walls having at least one longitudinal slot. A synthetic plastic casing is molded in situ about the negative electrode. After assembly of the positive electrode, depolarizer mix and separator and other required cell components with this negative electrode bearing said synthetic casing, an insulative closure member is mounted on the assembly to seal the contents of the casing surrounded negative electrode. The positive electrode projects through this cover and optionally a metal cap covers the protruding end of the positive electrode. The bottom of the negative electrode is either directly left uncovered by the casing to constitute the negative terminal of the generator. In

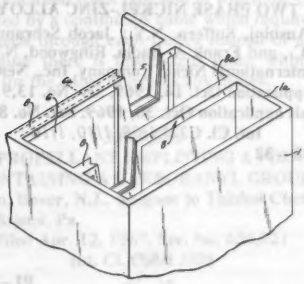
the alternative, a metallic cup in electrical contact with said bottom is left partially uncovered by the casing to constitute the negative terminal. This cup may be ribbed, if desired.

3,627,587

STORAGE BATTERY AND METHOD OF MAKING THE SAME

Hans-Georg Lindenberg, Hannover, and Ulrich Hintz, Frielingen, both of Germany, assignors to Varta Aktiengesellschaft, Frankfurt am Main, Germany

Filed May 27, 1970, Ser. No. 40,813
Claims priority, application Germany, June 3, 1969, P 19 28 288.3
Int. Cl. H01m *1/02*
U.S. Cl. 136—166 **15 Claims**



A storage battery has a casing composed of a bottom portion and a cover therefor. Both are hollow and have normally juxtaposed open sides with edge faces of the peripheral walls bounding the respective open sides. Both the cover and the bottom portion of the casing are subdivided by at least one partition wall a free edge of which is located in the plane of the respective edge face. One or both of these free edges is provided with a reinforcing bead wider than the respective partition wall and extending along parts or the entire free edge. The free edge of the partition wall in the bottom case portion is provided with a downwardly extending cutout in which a conductive bridge member is received with clearance which extends into the respective chambers to connect electrode assemblies located therein. This clearance is completely filled with a hardenable synthetic plastic material and at the same time the reinforcing bead is formed of the same material on the respective upper free edge, in accordance with the present method.

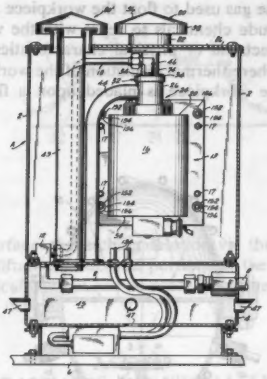
3,627,588

THERMOELECTRIC GENERATING ASSEMBLY

Martin A. Rubinstein, Morrisville, Pa., and Charles Teleki, West Orange, N.J., assignors to Isotopes, Incorporated, Westwood, N.J.

Filed Sept. 20, 1965, Ser. No. 488,483
Int. Cl. H01v *1/00, 1/02, 1/30*
U.S. Cl. 136—205 **6 Claims**

A thermoelectric generating assembly in which heat is produced by mixing air and fuel and causing the mixture to pass over a combustion member, the degree of heat being controlled by varying the amount of air and means being provided to equalize the air pressures at the air inlet to and the exhaust from the combustion chamber. The combustion chamber provides heat to a thermoelectric module comprising thermoelectric generating elements sealed in an evacuated space between walls having flexible portions, those walls including relatively thick portions of good heat-conductivity.

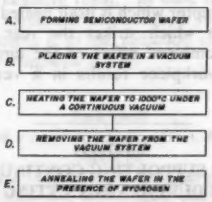


3,627,589

METHOD OF STABILIZING SEMICONDUCTOR DEVICES

James W. Sprague, Clay, N.Y., assignor to General Electric Company

Filed Apr. 1, 1970, Ser. No. 24,626
Int. Cl. H01l *7/34*
U.S. Cl. 148—1.5 **3 Claims**


A. FORMING SEMICONDUCTOR WAFER
B. PLACING THE WAFER IN A VACUUM SYSTEM
C. HEATING THE WAFER TO 1000°C UNDER A CONTINUOUS VACUUM
D. REMOVING THE WAFER FROM THE VACUUM SYSTEM
E. ANNEALING THE WAFER IN THE PRESENCE OF HYDROGEN

This invention relates to a method of minimizing the effects of mobile impurity ions in an insulating layer formed on a semiconductor body of silicon material. Initially the semiconductor body is placed under a reduced ambient pressure of less than 10^{-3} torr. While under this reduced pressure ambient the insulating layer is heated to a temperature in the range of 950° to 1150° C. for a time sufficient to minimize the deleterious effects of mobile impurity ions present in the insulating layer. The body is then heated in the presence of hydrogen at a temperature in the range between 250° to 550° C. for a time sufficient to minimize the effects of fast interface defects at the insulating layer-silicon interface.

3,627,590

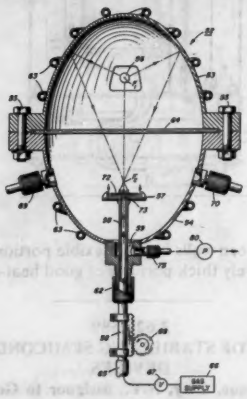
METHOD FOR HEAT TREATMENT OF WORKPIECES

Walter Kester Mammel, Yardley, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 2, 1968, Ser. No. 780,481
Int. Cl. H01l *7/34*
U.S. Cl. 148—1.5 **33 Claims**

A workpiece, for example a semiconductor slice, is floated on a layer of gas and heated by infrared radiation. The layer of gas thermally insulates the workpiece from adjacent, thermally-conductive bodies so that the temperature of the workpiece is rapidly increased. Upon the subsequent removal of

the radiation, the workpiece rapidly cools to the ambient temperature. In addition to supporting the workpiece, the layer of gas prevents physical contact between the workpiece and the flotation apparatus, thus ensuring even heating of the workpiece. The gas used to float the workpiece may be inert or it may include chemicals to react with the workpiece to modify the electrical or physical characteristics thereof. In applications where thermal insulation of the workpiece is less significant, the workpiece is placed upon a flat susceptor



positioned a predetermined distance from one focus of an ellipsoidal furnace. The direct heating of the upper surface of the workpiece by the infrared source is supplemented by indirect heating of the bottom surface of the slice by conduction from the susceptor which is itself heated by the reflected infrared radiation which strikes the rear surface of the susceptor. The combined effect of the direct and indirect heating of the workpiece results in a very even heating thereof.

3,627,591

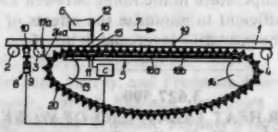
PROCESS FOR SUPPORTING CONTINUOUSLY CAST WORKPIECES DURING THE CUTTING OPERATION

Alfred Pfeuffer, Neu-Isenburg, and Gerhard Komma, Duisburg, both of Germany, assignors to Messer Griesheim GmbH, Frankfurt/Main, Germany

Original application Apr. 15, 1968, Ser. No. 721,319, now Patent No. 3,516,650, dated June 9, 1970. Divided and this application Nov. 17, 1969, Ser. No. 871,300

Int. Cl. B26f *3/06*

U.S. Cl. 148—9 **2 Claims**



A cutting arrangement for continuous casting equipment wherein the workpiece rides on support points moving at same speed as the cutting tool is characterized by a plurality of support points slidable relative to each other which are linked together to be delayed or accelerated in their movement prior to the start of the separation cut so that the cutting will take place between adjacent support points.

3,627,592

METHOD OF PRODUCING WELDING FLUX

Paul Schmidt, Frankfurt am Main, and Klaus Hennemann, Hofheim, Taunus, both of Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Germany

Filed Mar. 2, 1970, Ser. No. 15,881

Claims priority, application Germany, Mar. 13, 1969, P 19 12 649.9

Int. Cl. B23k *35/36*

U.S. Cl. 148—26 **4 Claims**

A method for the preparation of an agglomerated welding flux, especially for use in submerged arc welding and electroslag welding processes, wherein the components of the welding flux are mixed with a binding agent, while adding water thereto, to form a doughy mass; the doughy mass is then dried and calcined at a temperature at which the hydroxides are converted to their respective oxides. The binding agent is aluminum hydroxide, magnesium hydroxide or combinations thereof.

3,627,593

TWO PHASE NICKEL-ZINC ALLOY

Frank J. Ansuini, Suffern, N.Y.; Jacob Schramm, Spartanburg, S.C., and Frank A. Badia, Ringwood, N.J., assignors to The International Nickel Company, Inc., New York, N.Y.

Original application Oct. 14, 1969, Ser. No. 13,913. Divided and this application Oct. 30, 1969, Ser. No. 872,514

Int. Cl. C22f *1/08, 1/10, 1/16*

U.S. Cl. 148—32 **9 Claims**

Process of heat treating and mechanically working nickel-zinc alloys or copper-nickel-zinc alloys produces products having special alpha-beta microstructure characterized by high strength at room temperature and high deformability at elevated temperatures.

3,627,594

METHOD OF FORMING ELECTRIC INSULATING FILMS ON ORIENTED SILICON STEEL

Takaaki Yamamoto; Kaneo Akanuma, and Osamu Tanaka, all of Kitakyushu, Japan, assignors to Yawata Iron & Steel Co., Ltd., Tokyo, Japan

Filed Dec. 6, 1968, Ser. No. 781,963

Claims priority, application Japan, Dec. 12, 1967, 42/79243

Int. Cl. H01f *1/04*

U.S. Cl. 148—113 **7 Claims**

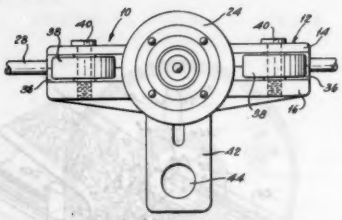
A method for producing a glassy film having an excellent insulating property on an oriented cold-rolled steel sheet by coating the surface of said silicon steel sheet with a mixture of a Ti compound and an Mg compound and possibly with the addition of an Mn compound thereto and then subjecting the coated silicon steel sheet to a heat-treatment.

3,627,595

ENCLOSED TRACK OVERHEAD CABLE CONVEYORS

John M. Leach, P.O. Box 341, Port Jefferson, N.Y.

Filed Mar. 9, 1970, Ser. No. 17,428
Int. Cl. B65g *17/20*
U.S. Cl. 198—177 R 9 Claims



The present invention relates to an overhead trolley conveyor of the enclosed track type and in which the trolleys are interconnected by a continuous cable which requires that the cable must pass through each trolley instead of around the trolleys because there is insufficient space within the enclosed track for the cable to bypass any trolley.

3,627,596

SOLID PROPELLANT EMPLOYING A POLYMER CONTAINING A CARBORANYL GROUP

Joseph Green, Dover, N.J., assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed Apr. 12, 1967, Ser. No. 634,021
Int. Cl. C06d *5/06*
U.S. Cl. 149—19 8 Claims

This application discloses a solid rocket propellant composition containing as its principal ingredients a major amount of finely divided oxidizer and a minor amount of a fuel binder. The fuel binder is essentially a cured condensation polymer of a dicarboxylic acid and a diol containing a carboranyl group. To facilitate curing the polymer may be provided with isocyanate terminals. Additives such as metal powders, e.g., aluminum powder; plasticizers, e.g., isopropyl carborane; burning rate modifiers, catalysts, etc., may be incorporated in the composition.

3,627,597

ENGRAVING

Nathan A. Tiner, 1017 Skyline Drive, Laguna Beach, Calif.

Filed Jan. 5, 1970, Ser. No. 834
Int. Cl. C23f *1/00*; B23p *1/00*
U.S. Cl. 156—13 9 Claims

The method of engraving in which a metal surface is coated with a film of an etchant resistant material that will adhere to the metal and which is decomposed upon irradiation by subatomic particles such for example as a fluorocarboxylic acid such as perfluorooctanic acid. Thereafter the resistant material is irradiated over those areas of the metal that are to be etched. The decomposed, irradiated film is rinsed away and the exposed metal is engraved with an etchant.

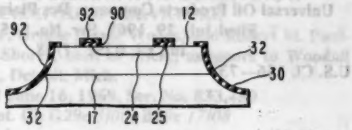
3,627,598

NITRIDE PASSIVATION OF MESA TRANSISTORS BY PHOSPHOVAPOX LIFTING

Bruce A. McDonald, Menlo Park, and Michael B. Dragmire, San Jose, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Syosset, N.Y.

Filed Feb. 5, 1970, Ser. No. 008,903
Int. Cl. H01l *7/00*, *7/50*
U.S. Cl. 156—13 7 Claims

A method of forming a barrier layer impermeable to mobile ions over both the curved and upper plane portions of the principal surface of a mesa-structured semiconductor device. The barrier layer is caused to crack when placed over a special liftant but not when placed over the remainder of



the device surface. An etching solution via the cracks then removes the liftant and desired portions of the barrier layer so that electrical contact can be made subsequently to active regions of the device.

3,627,599

METHOD OF APPLYING AN N,N'DIALLYLMELAMINE RESIST TO A SURFACE

Joel Edward Goldmacher, Cranbury, and Orville Elton Dow, Princeton, both of N.J., assignors to RCA Corporation

Filed Apr. 25, 1969, Ser. No. 819,492
Int. Cl. G03c *1/70*; C23c *13/04*
U.S. Cl. 156—13 4 Claims

A novel negative resist comprises N,N'diallylmelamine. A film of the N,N'diallylmelamine resist is applied to a surface of a body from the vapor state in an evacuated environment. The deposited film, being soluble in hot water, is converted to a form that is insoluble in boiling water by exposing it to a beam of electrons or of ultraviolet light. The water-insoluble film can be removed, when no longer needed, by dissolving it in boiling dimethylformamide.

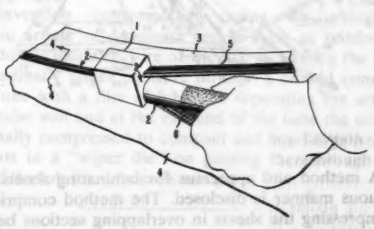
By the term "negative resist," as used herein, is meant a material that is hardened, or rendered insoluble in certain solvents, by exposing it to the radiation of a beam of electrons or of electromagnetic waves.

3,627,600

PROCESS OF FASTENING PLASTIC OR ELASTIC SHEETS

Donald Peter Reiter, Akron, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 21, 1969, Ser. No. 817,835
Int. Cl. A44b *19/02*
U.S. Cl. 156—66 6 Claims



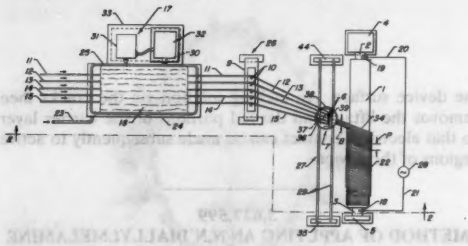
Flexible plastic or elastic sheets having marginal interlocking portions of longitudinally extending projections and channels are fastened together by progressively mating the sheets with a slide fastener so that the projections of one sheet fit into the channels of another while concurrently exuding a cement into the portion being mated.

3,627,601

METHOD OF FORMING A FILAMENT WOUND TUBE WITH AN INNER WALL HAVING HIGH-WEAR RESISTANCE

Charles M. Hayes, Hoffman Estates; Edwin J. Lutos, Chicago, and Allen K. Sparks, Des Plaines, all of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed July 29, 1969, Ser. No. 845,685
Int. Cl. B29c *27/08*
U.S. Cl. 156—73 4 Claims



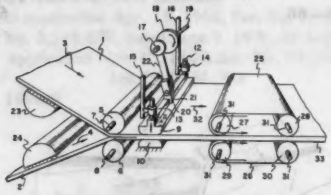
A method of forming a tube with an inner wall having a high-wear resistance and a low coefficient of friction comprising: deaerating an uncured thermosetting resin, coating glass filaments with the resin, and winding the glass filaments about a rotating mandrel in a band at a pitch no greater than the bandwidth. A first layer of wound glass filaments is formed in a single axial pass along the mandrel, and this first layer is helically overwound with subsequent layers. The resin coating the wound glass filaments is thereafter cured and the resulting tube is removed from the mandrel.

3,627,602

METHOD FOR LAMINATING SHEETS

Jan C. Van Dijk, Delft, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Filed Apr. 7, 1969, Ser. No. 814,051
Claims priority, application Great Britain, May 6, 1968, 21,342/68
Int. Cl. B29c *27/08*; B32b *31/20*
U.S. Cl. 156—73 7 Claims



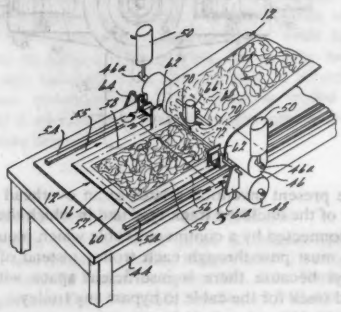
A method and apparatus for laminating sheets in a continuous manner is disclosed. The method comprises locally compressing the sheets in overlapping sections between the loading planes of two loading elements, at least one of which oscillates at a frequency between 0.1 and 1,000 cycles per second. The apparatus comprises loading means comprising two loading elements for compressing the sheets, driving means for transporting the sheets between the loading elements and activating means for oscillating at least one of the two loading elements in the loading direction at a frequency between 0.1 and 1,000 cycles per second (c/s).

3,627,603

METHOD OF MAKING REINFORCED FOAM PLASTIC PRODUCTS

James W. Greig, Grosse Pointe Park, Mich., assignor to Woodall Industries Inc.

Filed Feb. 24, 1969, Ser. No. 801,563
Int. Cl. B32b *5/20*
U.S. Cl. 156—79 7 Claims



A laminated structural panel consisting of two plastic saturated sheets on opposite sides of a rigid foam plastic core. The core is foamed and cured between the sheets, each of which has previously been united with a fiber matting. The matting disperses throughout the core as it is foamed to reinforce the core and mechanically hold it to the sheets.

3,627,604

FORMATION OF STAPLE FIBER YARN FROM NONWOVEN WEBS OF CONTINUOUS FILAMENTS

Stanley Davies; Barrie Linton Davies, and Anil Chandrakant Parikh, all of Pontypool, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Apr. 15, 1969, Ser. No. 816,397
Claims priority, application Great Britain, Apr. 16, 1968, 17,890/68
Int. Cl. D02g *1/00*
U.S. Cl. 156—148 9 Claims

A staple fiber yarn is formed by laying a nonwoven web of continuous filaments, slitting the web to form strips containing fibers of various lengths, and twisting the fibers together to form the yarn.

3,627,605

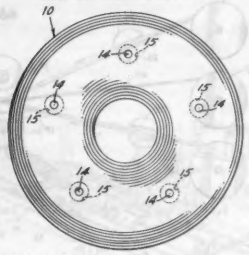
METHOD FOR MAKING BONDED FABRIC

James L. Taylor, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Nov. 24, 1969, Ser. No. 879,588
Int. Cl. D03c *19/00*
U.S. Cl. 156—148 3 Claims

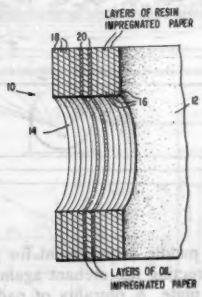
Woven polyethylene/polypropylene fabrics made by weaving a bicomponent polyethylene/polypropylene/polyethylene laminated tape yarn, the fabric being bonded at the points where ends and picks of the tape yarn cross by heat and pressure. The tape yarn is prepared by cutting into strips a laminate comprising outer layers of polyethylene, bonded to an inner layer of polypropylene. The laminate may be made in conventional fashion by extruding or casting films of the indicated composition. The strips are preferably oriented either before or after cutting.

3,627,606
CLUTCH FACING
Lloyd Oscar Bentz, Lancaster, and Harold Clifford Hilton, Manheim, both of Pa., assignors to Raybestos-Manhattan, Inc., Manheim, Pa.
Filed Nov. 17, 1969, Ser. No. 877,365
Int. Cl. B65h 81/02
U.S. Cl. 156—184 7 Claims



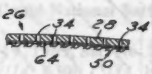
A clutch facing formed of a compressed spiral coil of fabric of V-shaped cross section with the projecting portions of the fabric nesting within recessed portions of adjacent convolutions, the fabric being impregnated with a heat-hardening cement containing an elastomer, the clutch facing being reinforced by a spiral coil of an assembly of substantially parallel continuous glass filaments in which the individual convolutions lie between adjacent convolutions of the fabric at the apex of the recessed portions thereof, the glass fibers having a surface capable of forming a strong bond with an elastomer, and the assembly of glass fibers being impregnated with an elastomer which is vulcanizably compatible with the elastomer in the fabric cement.

3,627,607
METHOD OF MANUFACTURING BEARING CAGE
James R. Benzinger, Orchard Park, N.Y., assignor to Spaulding Fibre Company, Inc., Tonawanda, N.Y.
Filed Apr. 29, 1968, Ser. No. 725,080
Int. Cl. B29d 31/02
U.S. Cl. 156—192 8 Claims



A laminated bearing cage in which a sheet of resin impregnated material is wound upon itself about a mandrel with there being a strip of oil receptive material intercalated within the coils of the wound, resin impregnated sheet. The resin is partially cured prior to winding so as to minimize migration of resin to the oil receptive strip and final curing is effected subsequent to winding. The wound article is then immersed in lubricating oil to impregnate the oil receptive strip for metered distribution of oil therefrom.

3,627,608
METHOD OF FORMING A PANEL HAVING A COMPOUND CURVATURE
Francis J. Steiner, Grosse Pointe Woods, and Robert M. Paulsen, St. Clair Shores, both of Mich., assignors to Woodall Industries Inc., Detroit, Mich.
Filed June 16, 1969, Ser. No. 833,480
Int. Cl. G29c 3/00; B29c 17/08
U.S. Cl. 156—211 22 Claims



A method of forming a flexible, self-supporting sheetlike structure having a compound curvature, including the steps of perforating a sheet of woodlike fibrous material, such as fiberboard, wetting the sheet, applying steam, and forming the compound curvature in a press. The method of forming an integral single piece automotive headliner includes forming the sheet into a flexible dish-shaped structure and finishing the inner concave surface by painting, or applying a fabric cushioning material.

3,627,609
ADHESIVE PROCESSES
Robert A. Bragole, Peabody, Mass., assignor to USM Corporation, Flemington, N.J.
Filed Feb. 24, 1969, Ser. No. 801,833
Int. Cl. B01j 1/10
U.S. Cl. 156—272 9 Claims

Surfaces of substrates which are difficult to bond strongly, e.g. polyethylene, are subjected to ultraviolet radiation in the presence of a photosensitizer and bonded with an adhesive comprising an elastomer and a reactive aldehyde resin to form a structurally strong joint.

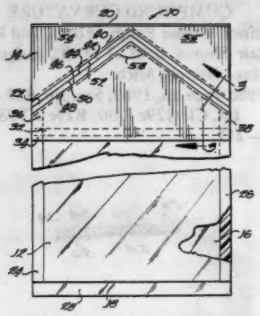
3,627,610
CONTINUOUS CURING OF ELONGATED ELASTOMERIC ARTICLES
Bruce M. Guelich, Pittsburgh, Pa., and Charles Porter, Andrews, Ind., assignors to H. K. Porter Company, Inc., Pittsburgh, Pa.
Filed Feb. 26, 1969, Ser. No. 802,442
Int. Cl. B32b 31/12
U.S. Cl. 156—278 4 Claims

This invention contemplates curing an elongated elastomeric article of indefinite length such as reinforced hose, elastomer insulated wire or the like by passing the article longitudinally under pressure through a heated complementary tube with a film of lubricant separating the article from the tube wall and at the exit end of the tube the article is additionally compressed to compact and bond together its components in a "wiper die" on passing therethrough for removal of the lubricant from its surface.

3,627,611
METHOD AND APPARATUS FOR THE MANUFACTURE OF SURGICAL POUCHES
Joseph P. Bonk, Des Plaines, Ill., assignor to Rollprint Packaging Products, Inc., Chicago, Ill.
Filed June 25, 1969, Ser. No. 836,332
Int. Cl. C09j 5/00
U.S. Cl. 156—306 3 Claims

A disposable surgical pouch having a corrugated, chevron,

rip open seal is disclosed comprising polyethylene front and backer pieces and a paper header, such pouches being made



in a continuous strip from rolls of sheet polyethylene and paper.

3,627,612

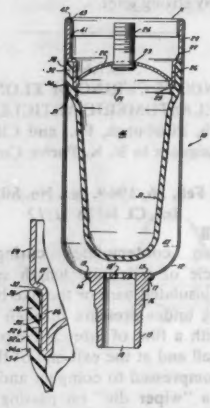
METHOD OF FORMING A BLADDER ASSEMBLY

Edward M. Greer, Beverly Hills, Calif., assignor to Greer Hydraulics, Inc., Los Angeles, Calif.

Original application Nov. 17, 1966, Ser. No. 595,164, now Patent No. 3,494,378, dated Feb. 10, 1970. Divided and this application May 29, 1969, Ser. No. 829,017

Int. Cl. C09j 5/00

U.S. Cl. 156—309 9 Claims



This invention relates to the art of pressure vessels, more particularly of the type using a deformable bladder having a cylindrical mouth of relatively large diameter compared to the diameter of the bladder and which snugly encompasses an annular metal retaining member, being secured thereto by curing a layer of rubber interposed between said annular retaining member and the adjacent portion of said bladder mouth.

3,627,613

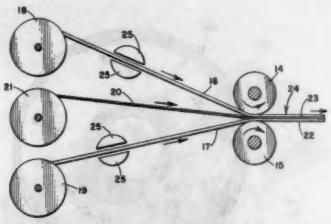
CONTINUOUS PROCESS FOR PREPARING COMPOSITES IN SHEET FORM

Thomas J. Stolki, Wilbraham, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed May 23, 1969, Ser. No. 827,274

Int. Cl. C09j 5/00

U.S. Cl. 156—309 4 Claims



A continuous process for preparing composites in sheet form by laminating together through a metallic interlayer two sheets each of a rubber-modified interpolymer system of monovinyl aromatic compound. A product composite can have more than one interlayer in a matrix, depending on the number of sheets and interlayer members employed in practicing the process.

3,627,614

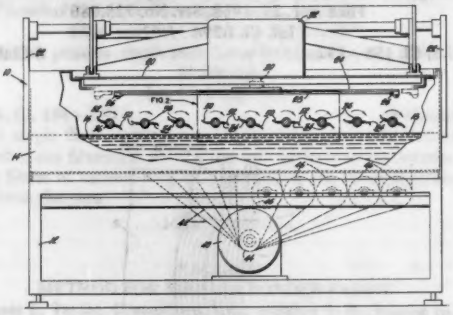
PADDLE ARRANGEMENTS FOR POWDERLESS ETCHING MACHINES

Louis E. Zeller, Warminster, and Robert J. Patsko, Merion, both of Pa., assignors to Master Etching Machine Co., Inc., Ambler, Pa.

Filed Sept. 19, 1969, Ser. No. 859,389

Int. Cl. C23g 3/00

U.S. Cl. 156—345 7 Claims



An improved paddle arrangement for powderless etching machines for directing the etchant against the surface of a photoengraving plate. A plurality of paddle assemblies are located between the etching bath and the plate and are rotatable about parallel horizontal axes of a selectively variable speed. Each assembly includes a plurality of paddles having variously angled outer end portions. The relation of the paddle edge angles of each assembly in cooperation with those of the adjacent assemblies provides a uniform distribution and the equivalent effect of a substantially perpendicular direction of the etchant against the plate surface during rotation of the paddle assemblies at any speed within the normal

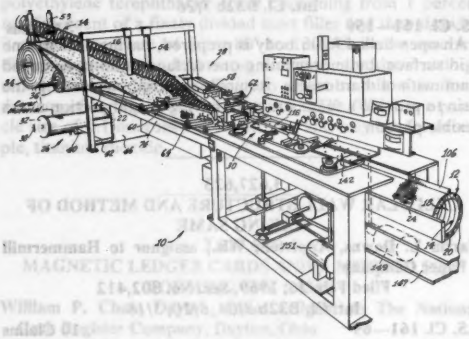
operating range, thereby eliminating the need for the conventional baffles between the paddle assemblies.

3,627,615

MACHINE FOR MANUFACTURING DUCTING

Wesley L. Guiles, Guilford, and Marcus A. Hall, Branford, both of Conn., assignors to Automation Industries, Inc., Los Angeles, Calif.

Filed Feb. 11, 1970, Ser. No. 10,514
Int. Cl. B29d *23/10*
U.S. Cl. 156—466 16 Claims



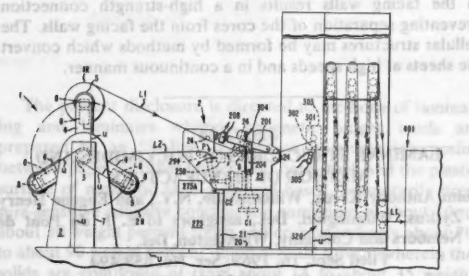
A machine and method are disclosed for substantially automatically and continuously manufacturing insulated air-conditioning duct in virtually unlimited lengths. The machine is effective to simultaneously feed a central reinforcing spring core, a blanket of insulating material and an outer wrapper or vapor barrier axially therethrough and secure them all together to form a continuous insulated flexible duct.

3,627,616

APPARATUS AND METHOD FOR AUTOMATICALLY TRIMMING AND JOINING LENGTHS OF UNIFORM THICKNESS PLASTIC SHEETING AND WEBS TO FORM A JOINED SHEET OF UNIFORM THICKNESS

Douglas Steward Davis, Parkersburg, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 20, 1969, Ser. No. 867,534
Int. Cl. B31f *5/00*; B65n *19/18*; G03d *15/04*
U.S. Cl. 156—502 11 Claims



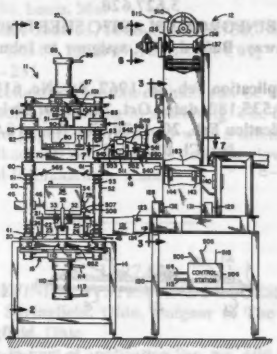
An apparatus and method having an automatically initiated and programmed sequence of operations especially well adapted for severing a first length of relatively thick and easily deformable sheeting of thermoplastic material being fed to a sheeting processing unit, and joining to its severed outgoing end portion the incoming end portion of a second length of similar sheeting in a butt-welded seam of uniform thickness equal to the thickness of the sheeting being joined, the apparatus comprising basically three cooperating interrelated moving units for gripping, conveying, cutting, and bonding lengths of sheeting in rapidly accomplishing its primary function with a minimum number of mechanical movements and operations.

3,627,617

BATTERY CONTAINER ASSEMBLY STATION

Edward G. Schaumburg, Oakdale Village; Donald T. Nordvik, Brooklyn Park, and Peter A. Recht, Bloomington, all of Minn., assignors to Gould-National Batteries, Inc., St. Paul, Minn.

Filed Feb. 19, 1969, Ser. No. 800,492
Int. Cl. B65h *1/14*; B30b *15/34*; H01m *35/18*
U.S. Cl. 156—566 20 Claims



A battery container assembly station having an automated battery cover dispensing mechanism for supplying battery covers to a heat sealing mechanism for forming an acid proof heat seal between the battery cover and the container.

3,627,618

APPARATUS FOR COMPRESSION OF A COMPOSITE LOG POLYGONAL OUTLINE

Ruben De Mello, Rua Jeronimo de Veiga 255, Sao Paulo, Brazil

Filed Mar. 17, 1969, Ser. No. 807,566
Int. Cl. B32b *31/00*
U.S. Cl. 156—580 4 Claims

An apparatus for compression of a composite log of wood and polygonal outline which comprises a plurality of annular compression units used to apply simultaneous pressure to the external surface of an array of matched individual faceted elements of adhesive-coated wood so as to bond them together to form a composite log which can be laminated.

3,627,619

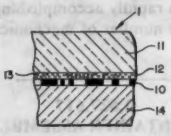
METHOD AND PRODUCT FOR IMPEDING DUPLICATION OF MICROFILM IMAGES

Harold J. Fromm, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 26, 1968, Ser. No. 716,109
Int. Cl. B44f *1/02*; G03c *1/78*
U.S. Cl. 161—3.5 6 Claims

Transparent spacer element or elements, and a light-dispersing medium are affixed to an image-bearing microfilm in a manner such that a contact copy film placed on either side of the film composite will necessarily be spaced from the

image layer of the microfilm and the light-dispersing medium. The transparent spacer element or elements are of sufficient thickness that contact copies made with diffuse light are not suitable for normal uses. The size, concentration and



location of the light-scattering centers in the light-dispersing medium are such that "no-light" areas or shadows, of size sufficient to substantially degrade the legibility of projection viewing, will be formed on any film contact copied therefrom with specular light.

3,627,620

REINFORCED PLASTIC SHEETING

Glen P. Gasaway, Buford, Ga., assignor to Johnson & Johnson

Original application Feb. 28, 1967, Ser. No. 619,309, now Patent No. 3,535,180, dated Oct. 20, 1970. Divided and this application Feb. 20, 1970, Ser. No. 12,983

Int. Cl. B32b *5/02, 3/10*

U.S. Cl. 161—57 **6 Claims**

Plastic sheet material comprising a textile lattice of coated intersecting yarns which are coating-fused at their intersections and are engulfed by layers of plastic materials on both sides to provide an essentially moisture-impervious reinforced laminated structure.

3,627,621

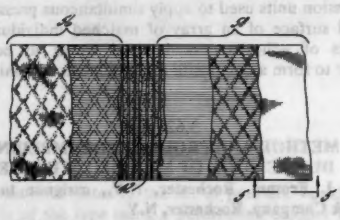
CROSS THREAD REINFORCED NONWOVEN MATERIAL

William L. Mowers, Oshkosh, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Nov. 14, 1969, Ser. No. 876,864

Int. Cl. B32b *3/28;* **B32b** *5/12*

U.S. Cl. 161—59 **3 Claims**



A cross thread reinforced nonwoven material having highly oriented fibers therein and the method of making same are disclosed. A highly oriented web or film and a spaced-pattern layer of adhesive are introduced to a cross-layer apparatus where reinforcing threads are deposited on the web with the threads disposed in spaced-apart parallel relation extending across the highly oriented web or film and partially embedded in and held in such relation by the adhesive of the spaced-pattern layer at locations where the adhesive extends between the web and the threads. The material may also include layers of cellulose wadding on one or both faces of the cross thread reinforced fiber web.

3,627,622

PARTIAL RESIN COATED FOAMED RESINOUS ARTICLES

Guadalupe Vega, Midland, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sept. 29, 1967, Ser. No. 671,790

Int. Cl. B32b *3/26*

U.S. Cl. 161—159 **3 Claims**

An open-celled foam body is prepared, having at least one rigid surface, by impregnating one surface of an open-celled foam with a hardenable resinous material, hardening the resin to provide a foam structure having a rigid portion and a flexible portion.

3,627,623

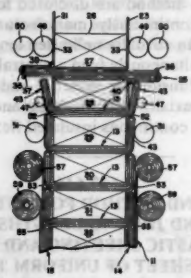
CELLULAR WALL STRUCTURE AND METHOD OF MAKING SAME

Martin L. Downs, Appleton, Wis., assignor to Hammermill Paper Company

Filed Feb. 26, 1969, Ser. No. 802,412

Int. Cl. B32b *3/04, 3/20, 5/18*

U.S. Cl. 161—69 **10 Claims**



Cored cellular members are made from sheets or webs of paper, paperboard, corrugated board, etc. with cross walls which include portions integrally attached to spaced, opposed facing walls. The integral attachment of the cross walls to the facing walls results in a high-strength connection preventing separation of the cores from the facing walls. The cellular structures may be formed by methods which convert the sheets at high speeds and in a continuous manner.

3,627,624

LAMINAR STRUCTURES OF POLYIMIDES AND METHOD OF MANUFACTURE

John Anthony Kreuz, Williamsville, N.Y., and Eugene Henry Zytkus, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 16, 1969, Ser. No. 858,494

Int. Cl. B32b *25/16, 27/16*

U.S. Cl. 161—165 **28 Claims**

A laminar article is provided of a layer of a polyimide and a layer of a fluorocarbon polymer which has been subjected to an electrical discharge treatment in an atmosphere containing acetone, which structure is heat-sealable and suitable for electrical insulation uses.

3,627,625

BIAXIALLY ORIENTED SHEET

Kenneth Barry Jarrett, Hitchin, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of application Ser. No. 641,473, May 26, 1967, now abandoned. This application May 27, 1970, Ser. No. 41,713

Int. Cl. B29d *7/24;* B32b *27/36*

U.S. Cl. 161—165 6 Claims

Uniformly biaxially oriented sheet of polyethylene terephthalate containing from 1 percent to 15 percent by weight of a finely divided inert filler and of a finely divided inert filler and of a thickness of from 0.014 to 0.035 inch. The sheet is prepared by extruding an amorphous polyethylene terephthalate sheet containing from 1 percent to 15 percent of a finely divided inert filler and then drawing it at a temperature of from 80° to 130° C. in the machine direction and in the transverse direction, the draw ratio in either direction being sufficiently great to allow uniform drawing of the sheet but less than 3.25. The filler has a particle size of 0.1 microns to 5.0 microns and may be, for example, titanium dioxide.

3,627,626

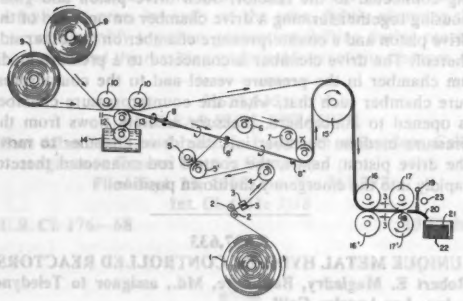
MAGNETIC LEDGER CARDS AND A METHOD FOR FORMING THE SAME

William P. Chao, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Sept. 15, 1969, Ser. No. 857,935

Int. Cl. B32b *27/38;* G11b *5/00*

U.S. Cl. 161—184 17 Claims



The present disclosure is directed to methods of laminating and laminates wherein magnetic ledger cards are prepared by an "in-line" procedure involving interposing between paper or other ledger card base stock and the plastic surface of magnetic tape a solvent-based, temporarily pressure-sensitive adhesive composition comprised of about 10 to about 30 weight percent solids and correspondingly about 70 to about 90 weight percent liquid organic solvent wherein the solids are comprised of from about 15 to about 35 weight percent of nitrile rubber and from about 65 to about 85 weight percent of epoxy resin. The liquid (organic solvents) portion can be, and preferably is, comprised of a mixture of organic solvents, including ketones, liquid hydrocarbons and mixtures thereof. The viscosity of the aforementioned adhesive solution at the time of application to the magnetic tape during lamination ranges from about 55 to 95 c.p.s.

3,627,627

NOVEL ADHESIVE COMPOSITIONS

Albert Nobell, and Thomas S. Armstrong, both of Coloma, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of application Ser. No. 646,165, June 15, 1967, now abandoned. This application Feb. 27, 1970, Ser. No. 14,780

Int. Cl. C08g *51/24*

U.S. Cl. 161—209 10 Claims

Novel adhesive compositions are obtained by the addition of adsorbent clay and a lower organic dicarboxylic acid to aqueous lower methylol phenol solutions. The resulting mixtures are especially adapted for making boil-resistant exterior grade hot-pressed plywood.

3,627,628

COLD PUNCHABLE LAMINATES

Ronald H. Dahms, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed June 21, 1968, Ser. No. 738,793

Int. Cl. B32b *27/10, 27/30;* C09j

U.S. Cl. 161—251 2 Claims

Industrial cellulosic laminates which can be cold punched without appreciably cracking or shattering. The laminates are prepared from papers impregnated with a mixture of a carboxylated alkadiene interpolymer and a low molecular weight phenol-formaldehyde resin.

3,627,629

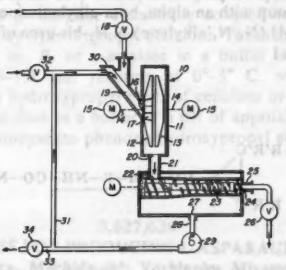
REFINING SYSTEM AND PROCESS

Sofus Miller, Springfield, Ohio, assignor to The Bauer Bros. Co., Springfield, Ohio

Continuation-in-part of application Ser. No. 600,113, Dec. 8, 1966, now abandoned. This application May 6, 1970, Ser. No. 34,984

Int. Cl. D21c *3/26, 7/00*

U.S. Cl. 162—17 12 Claims

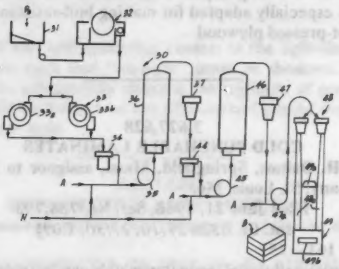


A method and apparatus for the continuous pulping of fibrous materials utilizing powered fiberizing means embodied in a closed system wherein applied power is optimally converted to thermal energy. The resultant heat is continuously reapplied to chemicals in the system at prevailing pressure conditions which inhibit the formation of steam. This limits the need for added chemicals and reduces power requirements for optimal pulping.

3,627,630
METHOD OF FLASH DRYING PULP

Lawrence F. Gagnon, Pittsfield, Mass., assignor to Beloit Corporation, Beloit, Wis.

Filed Dec. 4, 1969, Ser. No. 882,064
Int. Cl. D21d 3/00
U.S. Cl. 162—100 6 Claims



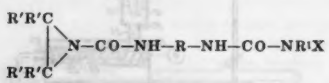
A method of producing pulp bales suitable for storage and repluping comprising fluffing dewatered paper stock, intermixing the stock with a heated gas to partially dry the stock, refluffing the partially dried stock, intermixing the fluffed stock with a heated gas to finish drying the stock and converting the dried stock into a pulp bale.

3,627,631
A METHOD OF WATERPROOFING PAPER USING AN N'-ALKYL, N1'N1'ALKYLENE-N,N1-BIS-UREA

Gerhard Ewald Sprenger, Carlstadt, N.J., assignor to Sun Chemical Corporation, New York, N.Y.

Filed Dec. 8, 1969, Ser. No. 883,285
Int. Cl. D21h 3/02
U.S. Cl. 162—158 3 Claims

Aqueous paper sizing compositions are prepared by combining an N'-alkyl,N-substituted urea containing an isocyanate group with an alpha, beta-alkylenimine to form an (N'-alkyl),(N_1:N_1'alkylene)-N,N_1-bis-urea of the formula Formula I

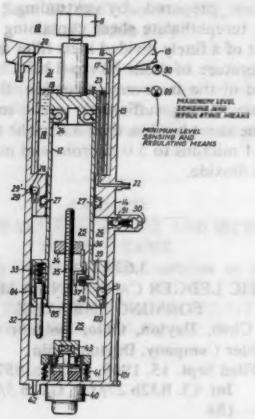


which is in situ, or subsequently, with the aid of an emulsifying agent dispersed in water. In the formula each R' is a group such as hydrogen, methyl or ethyl, which are independently selected and which contain from zero to not more than two carbon atoms. R is generally a divalent organic radical, namely an arylene, alkylarylene, arylalkylene, cycloalkylene, or alkylene radical, which may or may not contain ethylenic double bonds. R_1 is alkyl, alkenyl, aralkyl, alkylaryl, cycloalkyl or cycloalkenyl and X is independently selected from the same groups or is aryl or hydrogen. The carbon atoms of R, R_1 and X combined should total at least eight and preferably not more than 52 carbon atoms.

3,627,632
HYDRAULIC DRIVE FOR EMERGENCY SHUTDOWN OF NUCLEAR REACTORS

Heinz Acher, Friedberg, Hessin, and Eberhard Obenauf, Offenbach am Main, both of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Nov. 25, 1968, Ser. No. 778,457
Claims priority, application Germany, Nov. 24, 1967, P 16 14 098.0
Int. Cl. G21c 7/16
U.S. Cl. 176—36 15 Claims

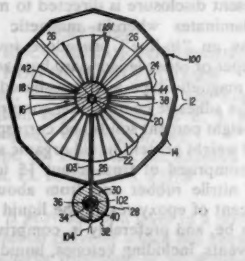


Hydraulic drive system for effecting the emergency shutdown by control rods of a nuclear reactor in which a guide housing is connected to the pressure vessel of the reactor. A control rod drive piston is movably mounted in a guide housing connected to the reactor. Such drive piston and guide housing together forming a drive chamber on one side of the drive piston and a counterpressure chamber on the other side thereof. The drive chamber is connected to a pressure medium chamber in the pressure vessel and to the counterpressure chamber such that, when the counterpressure chamber is opened to atmosphere, pressure medium flows from the pressure medium chamber into the drive chamber to move the drive piston; hence, the control rod connected thereto, rapidly into the emergency shutdown position.

3,627,633
UNIQUE METAL HYDRIDE CONTROLLED REACTORS

Robert E. Magladry, Baltimore, Md., assignor to Teledyne, Inc., Los Angeles, Calif.

Filed Nov. 6, 1967, Ser. No. 680,659
Int. Cl. G21c 7/02
U.S. Cl. 176—42 7 Claims



Metal hydride controlled nuclear reactors involving thermally isolated, first and second sealed containers carrying

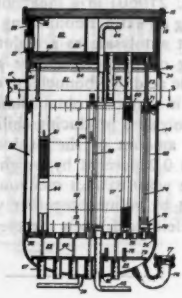
metal hydride, one including nuclear fuel material and the other acting as a hydrogen reservoir. Means are provided to facilitate reactor startup. In different embodiments, they take the form of electrical heaters for the core and reservoir elements, chemical heaters for these elements and an additional source of hydrogen for these elements. Hydrogen disassociation is utilized to perform a cooling function during atmospheric reentry of reactors in spatial applications.

3,627,634

NUCLEAR REACTOR CORE CLAMPING SYSTEM

Ralph W. Guenther, and Ned P. Hansen, both of San Jose, Calif., assignors to General Electric Company

Filed Nov. 26, 1968, Ser. No. 779,000
Int. Cl. G21c *19/00*
U.S. Cl. 176—58 5 Claims



A system for tightly clamping together the core components of a nuclear reactor is disclosed. A typical core is made up of a plurality of subassemblies each contained in an elongated shroud having a hexagonal cross section. Each of the outer ring of subassemblies includes ram means adapted to be pushed outwardly against a fixed ring which surrounds the core. This causes this outer ring, or edge plate of subassemblies to press inwardly on the core, tightly clamping the overall assembly together, preventing shifting during reactor operation and the resulting undesirable reactivity changes.

3,627,635

NUCLEAR FUEL RETAINER

Bart Allan Smith, and James L. Lass, both of San Jose, Calif., assignors to General Electric Company

Filed Sept. 23, 1968, Ser. No. 761,777
Int. Cl. G21c *3/18*
U.S. Cl. 176—68 13 Claims

A resilient cup-shaped retainer for preventing displacement of the fuel into the fission gas plenum of a nuclear reactor fuel element.

3,627,636

MANUFACTURE OF XYLITOL

Gerald Myer Jaffe; William Szkrybalo, both of Verona, and Peter Hans Weinert, Wayne, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Oct. 2, 1969, Ser. No. 863,333
Int. Cl. C12b *1/00*
U.S. Cl. 195—11 20 Claims

A process for producing xylitol from lignin-free hemicellulose materials wherein the polysaccharides have been converted to monosaccharides, subjecting said materials to fermentation with a hexose fermenting yeast and thereafter hydrogenating said aqueous medium.

3,627,637

PRODUCTION OF ORGANIC NITROGENOUS MATERIALS

Urbahn A. Phillips, Gretna, La., assignor to Commercial Solvents Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 425,918, Jan. 15, 1965, now abandoned. This application May 22, 1968, Ser. No. 731,298
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 R 5 Claims

A process for the production of L-glutamic acid and proteinaceous material by cultivating *Mycobacterium phlei*, NRRL B-3423, in an aqueous fermentation medium containing an aliphatic hydrocarbon as an energy source, thereby producing L-glutamic acid and protein rich cells of *M. phlei*.

3,627,638

AMYLASE CHEMICALLY COUPLED TO CELLULOSE ETHERS

Sidney Alan Barker; Peter John Somers, both of Birmingham, and Roger Epton, Wolverhampton, all of England, assignors to Ranks Horis McDougall Limited, London, England

Filed Oct. 16, 1969, Ser. No. 867,098
Claims priority, application Great Britain, Oct. 23, 1968, 50,351/68
Int. Cl. C07g *7/02*
U.S. Cl. 195—63 18 Claims

A water insoluble amylase comprising α- β- or γ-amylase chemically coupled to p-diazophenoxy hydroxypropyl cellulose or α- or β- amylase chemically coupled to p-isothiocyanatophenoxy hydroxypropyl cellulose. These are prepared by dissolving α-, β- or γ-amylase in a buffer within a pH range of 6.3–7.7 and reacting at 0°–5° C. with the p-diazophenoxy hydroxypropyl ether of cellulose or by dissolving α- or β-amylase in a buffer at a pH of approximately 8.6 with a p-isothiocyanato phenoxy hydroxypropyl ether of cellulose.

3,627,639

PROCESS FOR PRODUCING L-ASPARAGINASE

Masao Tanaka, Machida-shi; Yoshinobu Miyamura, Suntogun, and Fumio Kato, Sunto-gun, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Chiyoda-ku, Tokyo, Japan

Filed May 27, 1969, Ser. No. 828,332
Claims priority, application Japan, June 5, 1968, 43/38002
Int. Cl. C12d *13/10*
U.S. Cl. 195—66 A 12 Claims

Improved yields of L-asparaginase are produced by culturing a micro-organism belonging to the genus *Serratia* under aerobic conditions in an aqueous nutrient medium in which the amount of ammonia nitrogen is controlled to a level of 10 mg./ml. or less, while using fairly large amounts of carbon source (about 1–15 percent by weight) in the medium. *Serratia marcescens* is the preferred micro-organism. The

resultant purified L-asparaginase preparations have a specific activity of at least 1,500 units per mg. of protein and have shown favorable action against leukemia in the mouse.

3,627,640

ENZYME PURIFICATION AND DECOLORIZATION

Shmaryahu Blumberg, Rishonlezion; Ephraim Katchalski, Rehovot; Leon Goldstein, Rehovot; and Yehuda Levin, Tel-Aviv, all of Israel, assignors to Yeda Research and Development Co., Ltd., Rehovoth, Israel

Filed Sept. 27, 1968, Ser. No. 763,338
Int. Cl. C07g 7/02
U.S. Cl. 195—68 **9 Claims**

Method of purifying and decoloring a relatively crude enzyme material, e.g., enzyme or enzyme derivative, by forming a polymer-enzyme product.

3,627,641

ANTIBIOTIC PRODUCTION UTILIZING STREPTOMYCES VENEZUELAE VAR. FULVOFURVESCENS

Denise Mancy, Val-de-Marne; Leon Ninet, and Jean Preud'Homme, both of Paris, all of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed June 28, 1968, Ser. No. 741,216
Claims priority, application France, June 30, 1967, 112713
Int. Cl. C12d 9/00
U.S. Cl. 195—80 **13 Claims**

The invention provides a new process for producing the antibiotic 11837 by fermentation using two newly discovered strains of the micro-organism *Streptomyces venezuelae*, of which they constitute a variety which has been designated *var. fulvofurvescens*.

3,627,642

LYSOZYME SALTS

Tadakazu Suyama, Hirakata-shi; Ken-ichi Izaka, Kadeom-shi, and Hiroshi Shirakawa, Yamatotakada-shi, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

Filed Dec. 30, 1968, Ser. No. 788,048
Claims priority, application Japan, July 16, 1968, 43/50121
Int. Cl. C12k 1/00; C07g 7/02
U.S. Cl. 195—63 **6 Claims**

Lysozyme glutamate or aspartate having anti-inflammatory and antimicroorganism action, and having much more stability to heat than lysozyme itself and having long shelf life, which is prepared from human placentae by extracting lysozyme fraction from frozen human placentae with NaCl treating the fraction with a cation exchange resin, eluting, controlling pH in two steps, i.e., 2.0 –4.0 and then 6.0–9.0, centrifuging, desalting, adding glutamic or aspartic acid to the supernatant solution, heating at 60° C. for 10 hours and adding sulfated polymer to recover the desired lysozyme salts.

3,627,643

HIGH-STRENGTH DEXTRANASE AND PROCESS OF PREPARATION

Tibor Sipos, Murray Hill, N.J., and Frederick William Viebrock, Staten Island, N.Y., assignors to Baxter Laboratories Inc., Morton Grove, Ill.

Filed Mar. 4, 1970, Ser. No. 16,553
Int. Cl. C07g 7/028
U.S. Cl. 195—66 **14 Claims**

A novel high-strength dextranase preparation is formed by combining an impure liquid dextranase-containing mixture with clay to adsorb dextranase, separating the clay from the liquid mixture, removing the dextranase from the clay in a wash solution, combining the wash solution with an insoluble carbohydrate anionic exchange material having tertiary amine or quaternary ammonium active groups to reabsorb the dextranase, separating the anionic exchange material from the wash solution, and eluting dextranase from said material.

3,627,644

PROCESS FOR THE CULTIVATION OF HEMOLYTIC STREPTOCOCCI

Hajime Okamoto; Susumu Shoin, and Saburo Koshimura, all of Kanazawa-shi, Japan, assignors to Hajime Okamoto, Kanazawa-shi, Japan

Filed Feb. 18, 1969, Ser. No. 800,248
Claims priority, application Japan, Mar. 1, 1968, 43/13043
Int. Cl. A61k 21/00; C12d 1/20
U.S. Cl. 195—96 **5 Claims**

A process for the cultivation of hemolytic streptococci by cultivating hemolytic streptococci (e.g., *Streptococcus hemolyticus* ATCC 21060) in a meat infusion broth or the medium containing an extract containing water-soluble components in a yeast autolysate as a major component of pH 7.0–7.5 containing oxaloacetic acid or salts thereof and, if desired, ribonucleic acid or ribonuclease core at about 37° C. for 14–20 hours, in order to obtain hemolytic streptococci having high streptolysin S producing ability as well as antitumor activity. An amount of the oxaloacetic acid or salts thereof is at least 0.2 percent by weight by volume of the medium when the yeast extract medium is used, and is 0.1 percent by weight by volume together with 0.5 percent by weight of ribonucleic acid when the meat infusion broth is used.

3,627,645

METHOD AND REAGENTS FOR THE DETERMINATION OF NICOTINE ADENINE DINUCLEOTIDE PHOSPHATE AND OF GLUTATHIONE

Davide R. Grassetti, Berkeley, and John F. Murray, Jr., San Lorenzo, both of Calif., assignors to Arequipa Foundation, San Francisco, Calif.

Continuation-in-part of application Ser. No. 779,937, Nov. 29, 1968, now abandoned. This application July 31, 1969, Ser. No. 850,688
Int. Cl. G01n 31/14
U.S. Cl. 195—103.5 R **8 Claims**

The level of nicotine adenine dinucleotide phosphate (NADP) or of glutathione in a given sample is determined spectrophotometrically to extremely low levels, the method employed in testing for either chemical being to add an excess of the other together with a dithiobisheterocyclic reagent chemical as represented, for example, by 2,2′-dithiodipyridine, 6,6′-dithiodinicotinic acid, 6,6′-dithiobis-(isonicotinic acid) or 2,2′-dithiodipyrimidine. Enzyme catalysts to induce cycling of the glutathione and optionally of the NADP are also employed. In analyzing for either chemical the glutathione is converted from the reduced to the oxidized state by the reagent chemical as the latter is irreversibly converted to a product compound which normally possesses a characteristic ultraviolet spectrum. The rate at which said product compound is formed, or at which the reagent compound disappears, is observed spectrophotometrically and is a function of the concentration of the chemical under test. The oxidized glutathione is continuously converted to the reduced form by reaction with reduced NADP in the presence of glutathione reductase. When testing for NADP (and optionally when testing for glutathione as well) the oxidized NADP formed on reacting with glutathione is continuously converted to the reduced form in the presence of added substrate and dehydrogenase.

ERRATUM

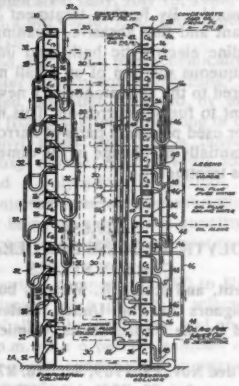
For Class 202—229 see:
Patent No. 3,627,668

3,627,646

MULTISTAGE COLUMNAR FLASH EVAPORATORS AND CONDENSERS WITH INTERSPERSED STAGING

Asriel Osdor, Tel Aviv, Israel, assignor to Hydro Chemical & Mineral Corp., New York, N.Y.

Filed Aug. 4, 1969, Ser. No. 847,103
Int. Cl. B01d *3/00, 3/02, 1/28, 1/26*
U.S. Cl. 202—173 28 Claims



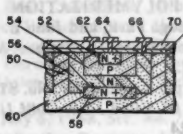
Multiple stage condensation of vapors at different pressures and temperatures by direct contact with a condensing liquid flowing down by gravity against increasing vapor pressure of successive condenser stages arranged in groups of successive stages each containing several elevationally displaced condenser stages where the condenser stages in at least two of such groups are interspersed so that the condenser stages of one of the groups are located elevationally between the condenser stages of the other group and pumping means arranged to pump the condensing liquid from group to group, and novel dual liquid flash evaporation arrangements wherein streams of a first liquid to be evaporated are sprayed at and collide with a free surface of another, hotter, liquid to achieve partial vaporization of the first liquid, and the first liquid thereafter forms droplets in and sinks down through the other liquid and coalesces under the other liquid to achieve further vaporization.

3,627,647

FABRICATION METHOD FOR SEMICONDUCTOR DEVICES

James L. Reuter, East Fishkill, and Jagtar S. Sandhu, Fishkill, both of N.Y., assignors to Cogar Corporation, Utica, N.Y.

Filed May 19, 1969, Ser. No. 825,863
Int. Cl. C23b *5/48, 5/46, 5/32*
U.S. Cl. 204—15 9 Claims



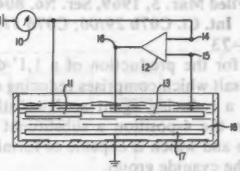
This disclosure relates to the formation of stable semiconductor devices by using a noble metal-silicon-oxygen alloy as a passivation type layer on a silicon dioxide layer located on one surface of a silicon substrate or device. The noble metal-silicon-oxygen alloy is deposited onto the semiconductor substrate surface during an anodization process preferably using a hydrogen peroxide solution containing from about 30 percent to about 0.1 percent hydrogen peroxide by volume in water. The anodization process serves to remove positive ion impurities from the silicon-silicon dioxide surface area which adversely affects the stability of the device. In one example, the noble metal-silicon-oxygen alloy is deposited primarily as a conductive layer while in another example, the noble metal-silicon-oxygen alloy is deposited as an insulating layer. For either example, the noble metal-silicon-oxygen alloy serves as a barrier to prevent impurities such as positive sodium ions from reaching the area of the silicon-silicon dioxide interface. This noble metal-silicon-oxygen layer is useful in various types of semiconductor devices including bipolar and unipolar devices.

3,627,648

ELECTROPLATING METHOD

Herbert A. Waggener, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hills, Berkeley Heights, N.J.

Filed Apr. 9, 1969, Ser. No. 814,647
Int. Cl. C23b *5/28, 5/48*
U.S. Cl. 204—27 9 Claims



The amount and quality of an electroplated deposit on articles having various areas to be plated are controlled by controlling the current density to one article, and applying a voltage to the remaining articles to be plated for the same time, the voltage applied being determined by the voltage developed at the surface of the first article, and thereby resulting in a controllable current density to the remaining articles.

3,627,649

PRODUCTION OF ELECTROPLATABLE POLYMERS

John P. Hogan, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed June 11, 1969, Ser. No. 832,451
Int. Cl. C23b *5/62*
U.S. Cl. 204—30 7 Claims

A method of producing an improved electroplatable polymer by incorporating a support material in the polymer upon its formation within specific concentrations, this being accomplished by regulating the productivity of the supported catalyst employed.

3,627,650

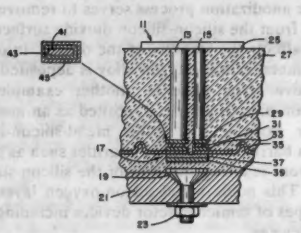
METHOD FOR PRODUCING A CHROMIUM-TUNGSTEN COATING ON TUNGSTEN FOR PROTECTION AGAINST OXIDATION AT ELEVATED TEMPERATURES

Arthur J. Seuffert, Caldwell, N.J., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed July 15, 1969, Ser. No. 841,958
Int. Cl. C23b *5/52*
U.S. Cl. 204—37 R 8 Claims

Method for retarding air oxidation of tungsten by chromium electroplating and high temperature sintering to form an

alloy gradient, and free chromium coating whose thickness is controlled by free chromium removal during the sintering



and/or by subsequent vacuum firing to provide a crack-free protective coating.

3,627,651

SYNTHESIS OF N:N'-DISUBSTITUTED BIPYRIDYLIUM SALTS

John Edward Colchester, and John Hubert Entwisle, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 5, 1969, Ser. No. 804,660

Int. Cl. C07b *29/06*; C07d *31/02*

U.S. Cl. 204—73 **16 Claims**

A process for the production of a 1,1'-disubstituted-4,4'-bipyridylium salt which comprises reducing electrolytically or by means of a reducing agent an N-substituted pyridinium salt having in the 4-position a substituent which is a good leaving group and which is capable of forming a stable anion particularly the cyanide group.

3,627,652

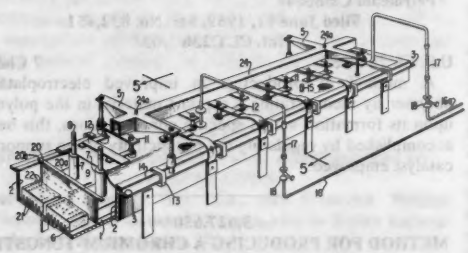
METHOD OF OPERATING MERCURY CATHODE ELECTROLYTIC CELL PLANT

Oronzio De Nora, and Giovanni Trisoglio, both of Milan, Italy, assignors to Oronzio de Nora Impianti Elettrochimici S.A.S., Milan, Italy

Continuation of application Ser. No. 626,860, Mar. 29, 1967, now abandoned. This application Mar. 27, 1970, Ser. No. 20,872

Int. Cl. C01d *1/12*; C01b *9/00*; C22d *1/04*

U.S. Cl. 204—128 **6 Claims**



Describes a process of operating a flowing mercury electrolysis cell plant in which a portion of the depleted brine is recycled to the cells without going through a resaturation and purification step and in which brine is introduced at several points along the cells and baffles are provided at intermediate points to direct flow of the brine into the spaces between the anodes and the flowing mercury cathode.

3,627,653

METHOD FOR CLEANING METAL AND METAL PARTS TO REMOVE CORROSION THEREFROM

Joseph A. Cricco, Ringwood, N.J., assignor to B. R. H. Industries, Newark, N.Y.

Filed Jan. 16, 1970, Ser. No. 3,489

Int. Cl. C23b *1/00*, *1/04*; C23g *1/02*

U.S. Cl. 204—141 **6 Claims**

Corrosion is removed from metal by cleaning the metal with an aqueous solution of hydrochloric acid, rinsing the metal and then immersing it in an aqueous solution of an alkali metal cyanide. By further treatment including buffing with a lubricant and fine abrasive, cleaning by means of an aqueous alkaline electrolytic bath, and immersing the part again in an aqueous solution of an alkali metal cyanide, the metal is restored to the appearance of a newly milled product and is resistant to further corrosion. This method is particularly useful for used precision parts of narrow tolerance since there is substantially no change in the dimensions of parts as a result of this treatment.

3,627,654

ELECTROLYTIC PROCESS FOR CLEANING HIGH-CARBON STEELS

George S. Petit, and Ralph R. Wright, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 19, 1969, Ser. No. 878,197

Int. Cl. C23b *1/04*, *1/00*

U.S. Cl. 204—145 R **9 Claims**

A single-step process for uniformly etching a high-carbon-steel surface, including its crystal boundaries, and for continuously removing from the surface the carbon exposed by etching. The steel surface is made anodic in an aqueous solution of orthophosphoric acid containing fluoride ion and a wetting agent. The applied voltage is selected to provide an overvoltage condition at the anode so that copious amounts of oxygen are liberated at the anodic surface to sweep exposed carbon therefrom. High-carbon-steel surfaces so processed form a chemical bond with subsequently deposited metal coatings, such as nickel platings.

3,627,655

PROCESS FOR DECREASING SURFACE RESISTIVITY OF ORGANIC SEMICONDUCTORS BY ULTRAVIOLET RADIATION

Evelio A. Perez-Albuerne, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 18, 1969, Ser. No. 859,206

Int. Cl. B01j *1/10*

U.S. Cl. 204—158 R **18 Claims**

The surface resistivity of certain organic semiconductors and semiconductor-containing elements is controlled by exposure to ultraviolet radiation.

3,627,656

CATALYST SYSTEMS FOR PHOTO-CHEMICAL POLYMERIZATION

Leroy J. Miller, Canoga Park, and John B. Rust, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 3, 1969, Ser. No. 813,305

Int. Cl. C08d *1/00*; C08f *1/16*

U.S. Cl. 204—159.24 **9 Claims**

An improvement in the method of effecting polymerization and particularly visible light photopolymerization of photopolymerizable ethylenic systems, or compositions thereof, by the use of a mixture of a selective combination of photo-oxidant dye material and catalyst cooperative therewith in initiating polymerization in combination with a light sensitizing activator to induce the reaction of said selec-

tive combination and to effect more rapid polymerization, and compositions thereof and therefor.

3,627,657

UNSATURATED POLYESTER COMPOSITIONS

Ugo Nistri; Silvio Vargiu; Bettino Passalenti, and Osvaldo Fiorani, all of Milan, Italy, assignors to Societa Italiana Resine S.p.A., Milan, Italy

Filed July 1, 1969, Ser. No. 838,332
Claims priority, application Italy, July 15, 1968, 18977 A/68
Int. Cl. C08f *45/56, 1/00;* B01s *1/00*
U.S. Cl. 204—159.15 6 Claims

There is provided, stable and photochemically hardenable unsaturated polyester compositions comprising:

a. an unsaturated polyester prepared by mixing (1) a monomer selected from the group consisting of monomers of the acryl and vinyl types with (2) a polycondensation product of a hydroxyl number not below 40, formed from a polycarboxylic and a polyhydroxylic alcohol, wherein the acid or alcohol contains nonaromatic unsaturation, said acryl or vinyl monomer being employed in a quantity of from 20 percent to 70 percent by weight with respect to the polycondensation product,

b. a stabilizing system composed of 200 to 800 p.p.m., by weight of the polyester of a phosphite selected from the group consisting of alkyl phosphites and aryl phosphites, and from 10 to 50 p.p.m. of a 6 percent solution of a member selected from the group consisting of copper naphthenate and copper octoate; and

c. from 0.1 to 5.0 percent, by weight of said polyester, of a compound selected from the group consisting of benzoin and benzoin derivatives having an alkyl group containing one to eight carbon atoms in the alpha position. Optionally, the polycarboxylic acid can be partially replaced by a saturated dicarboxylic acid.

3,627,658

LEAD COMPOUNDS USED TO PROMOTE ATOMIC RADIATION INDUCED CROSS-LINKING IN CHLORINATED OLEFIN POLYMERS

James R. Ryffel, Anderson, S.C., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 9, 1970, Ser. No. 1,876
Int. Cl. B01j *1/00;* C08f *1/00*
U.S. Cl. 204—159.18 4 Claims

This invention pertains to cross-linking chlorinated olefin polymers and sheet materials with atomic radiation and to a means of promoting such cross-linking wherein from about one to 10 parts by weight of a lead compound selected from the group consisting of dibasic phosphites, dibasic phthalates, dibasic stearates, normal stearates, chlorostearates, ortho silicates, tribasic sulfates, tetrabasic fumarates and silicate-sulfates, is blended with the chlorinated olefin polymer prior to exposure thereof to atomic radiation.

3,627,659

RADIATION TREATMENT OF HALOGEN CONTAINING OLEFINICALLY UNSATURATED ESTERS

Matthias Marx, Bad Duerkheim; Albrecht Zosel, Ludwigshafen, Rhine; Herbert Spoor; Heinz Pohlemann, both of Limburger, Upper Palatinate, and Dieter Heinze, Neckargemuend, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Germany

Filed July 8, 1968, Ser. No. 743,033
Claims priority, application Germany, July 11, 1967, P 17 20 283.4
Int. Cl. B01j *1/00;* C08d *1/00*
U.S. Cl. 204—159.22 3 Claims

A process for the production of coatings, impregnations or bonds by polymerization and cross-linking of mixtures containing olefinically unsaturated esters containing halogen by means of ionizing radiation.

3,627,660

PHOTOCHEMICAL PREPARATION OF A BICYCLIC LACTONE

John B. Siddal, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Filed Dec. 8, 1969, Ser. No. 883,301
Int. Cl. B01j *1/10*
U.S. Cl. 204—162 R 6 Claims

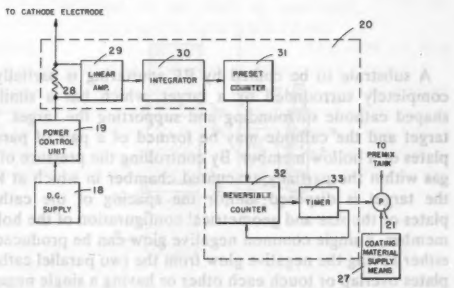
Synthesis of cis 2-(1'-methyl-2'-isopropenylcyclobutyl)ethanol, a component of the boll weevil sex attractant, and intermediates therefor, in which 5-hydroxy-pent-2-ynoic acid ester or ethers thereof is methylated followed by cyclization to yield 3-methylpent-2-eno-5-lactone which is irradiated in presence of ethylene to yield 2,3-cycloethylene-3-methylpentano-5-lactone which is cleaved and converted into 2-(1'-methyl-2'-isopropenylcyclobutyl)ethanol.

3,627,661

ELECTRONIC APPARATUS AND METHOD

George G. Gordon, and Donald E. Orem, both of Indianapolis, Ind., assignors to Ransburg Electro-Coating Corp., Indianapolis, Ind.

Filed Feb. 13, 1969, Ser. No. 798,935
Int. Cl. B01k *5/02*
U.S. Cl. 204—181 14 Claims



An apparatus for and method of causing the concentration of coating materials in a coating solution to be automatically adjusted. The apparatus monitors the current flow from a power source to the coating solution and provides pulses substantially proportional to the integral of such current flow. The apparatus counts in a first direction in response to the pulses and energizes means causing the coating material solution to be adjusted in response to counting in the first direction. The energized means causing counting in a second direction until the apparatus reaches a determined count at which time the adjustment of the coating material is terminated.

3,627,662

THIN FILM TRANSISTOR AND METHOD OF FABRICATION THEREOF

Alfred E. Feuersanger, Franklin Square, N.Y., assignor to GTE Laboratories Incorporated

Continuation of application Ser. No. 723,769, Apr. 24, 1968, now abandoned. This application Feb. 24, 1970, Ser. No. 14,739
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 10 Claims

A thin film transistor utilizing an insulated gate structure is described wherein the semiconducting layer is formed of defect-nickel oxide having the general formula $Ni_{(1-x)}O$, wherein x is within the range of 10^{-7} to 10^{-2}. In a preferred embodiment, the insulating layer overlying the defect-nickel oxide semiconducting layer is formed of stoichiometric nickel oxide thereby reducing the number of steps required

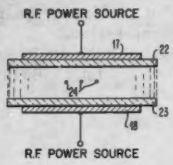
in fabrication. The thin film transistor is fabricated within a single system by utilizing reactive sputtering for the formation of the semiconducting and insulating layers. The sputtering takes place in a pure oxygen atmosphere in the absence of inert gases with the result that the characteristics of the deposited nickel oxide films can be varied by controlling the deposition rate during sputtering.

3,627,663

METHOD AND APPARATUS FOR COATING A SUBSTRATE BY UTILIZING THE HOLLOW CATHODE EFFECT WITH RF SPUTTERING

Pieter D. Davidse, Poughkeepsie, and Howard L. Whitaker, Kingston, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 25, 1968, Ser. No. 715,804
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **19 Claims**



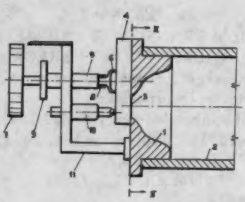
A substrate to be coated by RF sputtering is partially or completely surrounded by a target, which has a similarly shaped cathode surrounding and supporting the target. The target and the cathode may be formed of a pair of parallel plates or a hollow member. By controlling the pressure of the gas within the partially evacuated chamber in which at least the target is disposed and/or the spacing of the cathode plates or the size and geometrical configuration of the hollow member, a single common negative glow can be produced by either having the negative glow from the two parallel cathode plates overlap or touch each other or having a single negative glow within the hollow member.

3,627,664

APPARATUS FOR ELECTROCHEMICALLY TREATING AND TESTING SURFACE AREAS

Rinaldo Grimaldi, Genoa, and Nereo Vantini, Rome, both of Italy, assignors to Centro Sperimentale Metallurgico S.p.A., Rome, Italy

Filed Aug. 29, 1968, Ser. No. 756,203
Claims priority, application Italy, Sept. 6, 1967, 7276 A/67
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 **5 Claims**



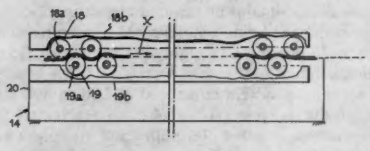
Electrochemical measures and treatments and diffractometric analysis of given areas of a same surface of a metal test strip are allowed by a device by which it is possible to obtain several tests in a relatively short period of time as compared to the time needed by conventional methods, being further sure that such different tests concern a single surface of a same test strip. Therefore, the material on which the treatments are performed not only is of the same composition, but also offers to the various successive tests a surface which was subject to the same cleaning process. The relevant metal test strip must thus assume a particular shape in order to be used with the device.

3,627,665

APPARATUS FOR THE PRODUCTION OF FLAT METAL SHEETS, PARTICULARLY TIN PLATE SHEETS

Willy Charles de Laminne, Liege, Belgium, assignor to Cockerill-Ougree-Providence et Esperance-Longdor en abrege "Cockerill", Seraing-lez-Liege, Belgium

Filed Mar. 3, 1967, Ser. No. 620,528
Int. Cl. B01r *3/00*; C23g *5/68*
U.S. Cl. 204—209 **1 Claim**



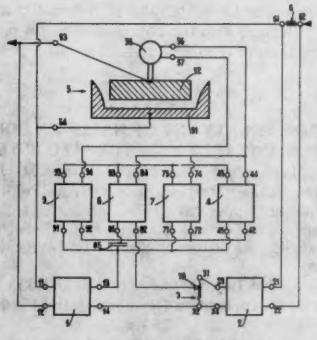
An apparatus for the continuous production of tin plate sheet metal including a spool of sheet metal, an unrolling device carrying the spool, a strip of sheet from the spool, a driving device advancing the strip, a welding device, an accumulator for the strip, a tensioning device composed of a braking means and a traction means for maintaining the strip taut during its passage in the apparatus, a degreasing device, a pickling device, rinsing vats, an electric tinning device, for applying a tin coating on the strip, a drying device, a rollers smoothing device into which the strip of metal sheet passes, a re-fusing device of the tin coating, a hole detector and a guillotine for cutting the strip.

3,627,666

APPARATUS FOR AUTOMATICALLY REGULATING THE ANODE GAP IN ELECTROLYSIS CELLS

Rene L. Bonfils, Saint-Jean de Maurienne, France, assignor to Compagnie Pechiney, Paris, France

Filed Oct. 30, 1968, Ser. No. 771,834
Claims priority, application France, Nov. 6, 1967, 127,012
Int. Cl. B01k *3/00*; C22d *3/12*
U.S. Cl. 204—225 **7 Claims**



An apparatus for automatically regulating the gap between anode and cathode in electrolytic cells in response to the amount and sign of voltage differential between *U–RI* and *e*

in which U is the voltage at the terminals of the cell, I the intensity of the current passing through the cell, R is a predetermined value of internal resistance of a cell used as a reference while e is the counterelectromotive force of the electrolysis.

3,627,667

ELECTROMECHANICAL MACHINING SHORT CIRCUIT ELECTRODE DETECTOR

Erwin J. Plofsky, Deerfield, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed July 23, 1968, Ser. No. 746,985
Int. Cl. B23p *1/02*; C23b *5/76*
U.S. Cl. 204—224 **5 Claims**

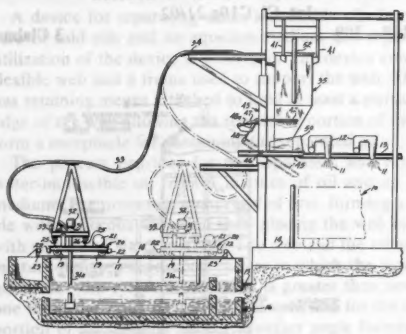
A method and apparatus for detecting a short circuit between the cutting electrode tool and workpiece in electrochemical machining. This detector takes advantage of the battery formed by the dissimilar electrode and workpiece metals saturated with an electrolyte by measuring the difference in the electromotive force when there is proper gap spacing and when there is metal-to-metal contact and preventing the power supply from being turned on when there is metal-to-metal contact, thus protecting the electrode tool from damage.

3,627,668

COKE BREEZE RECLAIMING SYSTEM

Frans Wethly, Manhasset, N.Y., assignor to Wilputte Corporation

Filed July 8, 1969, Ser. No. 839,825
Int. Cl. C10b *39/08*
U.S. Cl. 202—229 **9 Claims**



This invention is directed to process and apparatus for reclaiming small particles of coke, commonly known as coke breeze. Water containing coke breeze which is drained from the quenching car flows into a sump. A slurry pump is mounted for travel lengthwise and crosswise of said sump and pumps the water containing coke breeze into an elevated settling tank. Water drains from the settling tank back into the sump leaving coke breeze in the tank. At predetermined intervals, for example every third quench, a hydraulic gate on the bottom of the settling tank is opened and the coke breeze is allowed to fall onto the coke in the quenching car. Subsequently, the coke with coke breeze is dumped on a coke wharf and the coke breeze is recovered in a coke-screening station.

3,627,669

ELECTRODES FOR ELECTROCHEMICAL CELLS

John Hubert Entwisle, and Anthony Scrutton, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 21, 1969, Ser. No. 878,885
Claims priority, application Great Britain, Dec. 13, 1968, 59,450/68
Int. Cl. B01r *3/04*
U.S. Cl. 204—190 F **6 Claims**

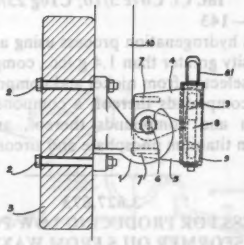
An electrode for use in electrochemical processes comprising a film-forming metal support member carrying a semiconducting coating consisting of tin dioxide, oxides of antimony and optionally a chlorine-discharge catalyst selected from the difluorides of manganese, iron, cobalt, nickel and mixtures thereof.

3,627,670

ANODE ROD TIGHTENING APPARATUS FOR ALUMINA ELECTROLYSIS CELLS

Daniel Duclaux, 135 bis rue du fourbourg de Roubaix, Lille Nord, France

Filed Apr. 13, 1970, Ser. No. 27,777
Claims priority, application France, Apr. 14, 1969, 6910161
Int. Cl. C23b *5/70*; C22d *3/02*
U.S. Cl. 204—297 R **8 Claims**



An anode rod tightening apparatus for alumina electrolysis cells having main bus bars comprising the combination of a clamping device and a driving mechanism in which the clamping device is formed of a horizontally disposed shaft with a pair of levers articulated on the shaft and a nut member on each of the levers adapted to engage opposite screw-threaded sections on a screw member for displacement of the levers in the direction toward and away from each other responsive to turning movement of the screw and a jaw member on each lever adapted to engage the anode rod when the levers are apart and in which the driving mechanism comprises a double clamp for engaging laterally spaced apart portions of the shaft and a wrench mounted for vertical movement into and out of engagement with the screw to effect turning movement of the screw when in operative engagement therewith and a guide means along the rod for guiding the driving mechanism.

3,627,671

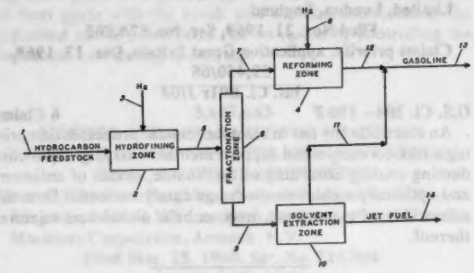
COMBINATION PROCESS OF CATALYTIC REFORMING AND EXTRACTION

Robert H. Kozlowski, Berkeley, and Robert P. Sieg, Piedmont, both of Calif.

Filed Oct. 9, 1969, Ser. No. 865,011
Int. Cl. C10g *35/08*
U.S. Cl. 208—93 **4 Claims**

Increased yields of gasoline and jet fuel can be obtained from a feed boiling from 150° to 550° F by fractionating the feed into two streams, reforming the lower-boiling stream at low pressure to produce a gasoline product, solvent

extracting the higher-boiling stream to produce a raffinate and an extract, blending the extract with the gasoline product



from the reforming zone, and using the raffinate for jet fuel.

3,627,672

CATALYTIC HYDROGENATION WITH METAL PHOSPHATE-CONTAINING CATALYSTS

James R. Kittrell, El Cerrito, and Richard C. Robinson, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Sept. 29, 1969, Ser. No. 862,036
Int. Cl. C07c *5/10*; C10g *23/02*
U.S. Cl. 208—143 **3 Claims**

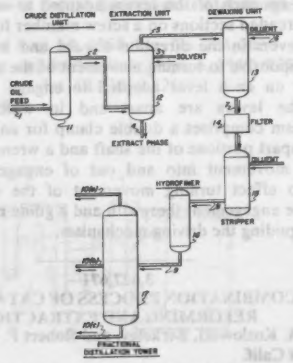
Aromatics hydrogenation process using a catalyst having a particle density greater than 1.4 g./cc., comprising alumina, a component selected from nickel and compounds thereof and cobalt and compounds thereof, a component selected from molybdenum and compounds thereof, and a component selected from titanium phosphate and zirconium phosphate.

3,627,673

PROCESS FOR PRODUCING LOW-POUR POINT TRANSFORMER OILS FROM WAXY CRUDES

Lorne W. Sproule, and Donald W. Murray, both of Sarnia, Ontario, Canada, assignors to Esso Research and Engineering Company

Filed Jan. 28, 1969, Ser. No. 794,688
Int. Cl. C10g *23/00, 31/14, 21/00*
U.S. Cl. 208—211 **11 Claims**



A high-stability, low-pour point insulating oil is prepared by a process wherein a broad waxy vacuum gas oil fraction is first dewaxed and then fractionated to yield the desired insulating oil fraction. The broad vacuum gas oil fraction may be treated to remove aromatics and polar components. Likewise, the dewaxed oil may be hydrofined before fractionation to improve color, stability and sulfur content. The insulating oil fraction is obtained from the dewaxed oil as a heart cut. The bottoms fraction may be used as a lubricating oil, and the pour point of this fraction can be improved with further fractionation. The high-boiling waxy contaminants picked up during processing are removed as bottoms, thus yielding a product having an improved pour point when compared with an oil prepared by fractionation prior to dewaxing.

3,627,674

CATALYST COMPOSITION AND HYDRODESULFURIZATION WITH AN EXTRUDED COMPOSITE CONTAINING ALUMINA, GROUP VI-B METAL AND ZINC COMPONENT

Gary J. Nagl, Downers Grove, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 6, 1969, Ser. No. 874,696
Int. Cl. C10g *23/02*; B01j *11/40*
U.S. Cl. 208—216 **8 Claims**

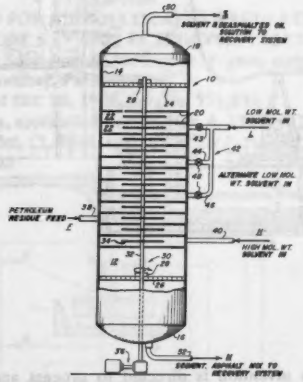
A hydrorefining (desulfurization) catalyst of a coextruded composite of an alumina-containing porous carrier material, a Group VI-B metal component and a zinc component. The Group VI-B metal component constitutes from about 4.0 percent to about 30.0 percent by weight and the zinc component is present in an amount of 1.0 percent to about 10.0 percent by weight, calculated as the elemental metals.

3,627,675

SOLVENT DEASPHALTING WITH TWO LIGHT HYDROCARBON SOLVENTS

John G. Ditman, Newark, and Joseph C. Dunmyer, Jr., Livingston, both of N.J., assignors to Foster Wheeler Corporation, Livingston, N.J.

Filed Oct. 16, 1969, Ser. No. 866,853
Int. Cl. C10g *21/02*
U.S. Cl. 208—309 **3 Claims**



The invention deals with a method and apparatus for treating asphaltic feed stock in which high-molecular-weight hydrocarbon solvent is introduced into a compartmentalized contacting tower below the feed stock, and a low-molecular-weight hydrocarbon solvent is introduced above the feed stock. The high-molecular-weight solvent is an alkane or alkene hydrocarbon containing from three through seven carbon atoms inclusive and the low-molecular-weight solvent consists of an alkane or alkene hydrocarbon containing from two through six carbon atoms, with the low-molecular-weight solvent having at least one less carbon atom than the high-molecular-weight solvent.

3,627,676

METHOD FOR OXIDIZING THE THIOSULFATE IONS IN A THIOSULFATE

Edwin J. Eccles, Jr., Mount Holly, N.C., assignor to Martin Marietta Corporation

Filed Feb. 25, 1971, Ser. No. 119,000
Int. Cl. C02c 5/04
U.S. Cl. 210—11 2 Claims

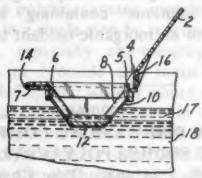
Method for oxidizing the thiosulfate ions in a thiosulfate waste comprising establishing a liquid aqueous oxidative zone; introducing dilute aqueous $Na_2S_2O_3$, aqueous NH_4OH, and aqueous H_3PO_4 into the zone; aerating and agitating the result at pH1.4-1.6 until the $Na_2S_2O_3$ is oxidized to the hydrolysis products of sodium sulfate and sulfuric acid; and withdrawing aqueous liquid from the zone.

3,627,677

PROCESS OF REMOVING OIL FROM MIXTURES OF OIL AND AQUEOUS MEDIA

James F. Dyrud, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Oct. 14, 1969, Ser. No. 866,188
Int. Cl. B01d 17/02
U.S. Cl. 210—23 8 Claims



A device for separating water-immiscible oils from a mixture of said oils and an aqueous medium and a process for utilization of the device is described. The device comprises a flexible web and a frame used to support the web. The frame has retaining means attached to hold at least a portion of the edge of the web allowing the remaining portion of the web to form a receptacle for containing the separated oil.

The process provides for the separation and removal of water-immiscible oil from a mixture of oil and an aqueous medium. The process is comprised of first, forming a receptacle with a fibrous web, and then placing the web in contact with an oil and water mixture. The web and the oil and water mixture define a separation system in which the work of adhesion for the system as a whole is greater than one-half to one times the value of the work of cohesion for the oil-water portion of said system and the contact angle formed by the oil in an oil-water mixture with a smooth surface of a fiber-forming polymer is less than 90°. The oil is preferentially absorbed into the web until the web is substantially saturated. The receptacle formed by the web then becomes filled with oil as a result of the hydrostatic pressure imparted to the substantially saturated web.

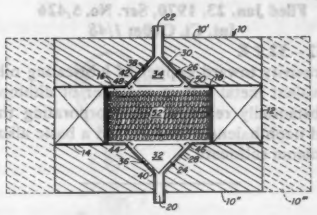
3,627,678

MAGNETIC SEPARATOR AND MAGNETIC SEPARATION METHOD

Peter Grant Marston, Glouster, Mass.; John Joseph Nolan, Randolph, Mass., and Laszlo Miklos Lontai, South Bend, Ind., assignors to Magnetic Engineering Associates, Inc., Cambridge, Mass.

Filed Sept. 3, 1969, Ser. No. 854,895
Int. Cl. B01d 35/06
U.S. Cl. 210—42 29 Claims

A magnetic separation method and magnetic separator is disclosed including an enclosure within an electromagnetic coil surrounded by a ferromagnetic return frame including a first portion adjacent one side of the coil and covering the area enclosed by the coil and a second portion adjacent the



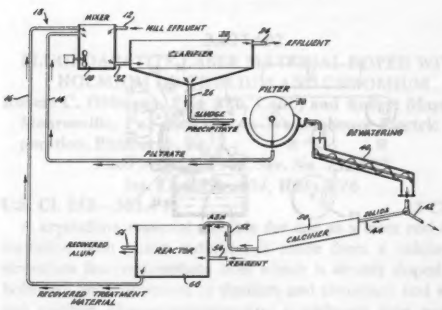
other side of the coil and covering the area enclosed by the coil, and inlet and outlet means in the return frame for introducing and removing fluid from the enclosure.

3,627,679

EFFLUENT TREATMENT PROCESSES

Robert R. Fuller, Tuscaloosa, Ala., assignor to Gulf States Paper Corporation, Tuscaloosa, Ala.

Filed May 25, 1967, Ser. No. 641,304
Int. Cl. C02c 5/02
U.S. Cl. 210—45 8 Claims



A waste effluent treatment which involves contacting a waste effluent, e.g. pulp and paper mill effluent, with a metal salt reagent, preferably alum mud. Treatment decolorizes the effluent and precipitates a substantial portion of the organic content. The precipitate and sludge is dewatered, then calcined, and the reagent regenerated from the ash for use again in a cyclic process.

3,627,680

METHOD OF CLARIFYING WATER

Gilbert Desbos, Paris, France, assignor to Compagnie des Eaux et de L'Ozone, Paris, France

Continuation of application Ser. No. 804,257, Mar. 4, 1969, now abandoned. This application Sept. 28, 1970, Ser. No. 76,331
Int. Cl. C02b 1/20
U.S. Cl. 210—52 1 Claim

Water is clarified by flocculation using as a flocculation additive, a dispersion of 1 g./l. of cellulose-free sodium alginate in demineralized water titrating at less than 10° hydrotimetric. The dispersion is added to the water to be treated in an amount corresponding to 0.2–0.5 p.p.m. to alginate.

3,627,681

LUBRICANT COMPOSITIONS

William H. Chandler, Wood River, Ill., assignor to Shell Oil Company, New York, N.Y.

Filed Jan. 23, 1970, Ser. No. 5,426
Int. Cl. C10m 1/48
U.S. Cl. 252—32.7 E 6 Claims

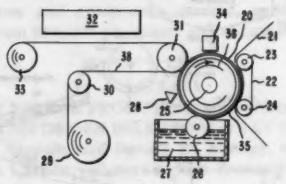
The corrosivity toward copper of lubricating oils containing a polyvalent metal salt of a diester of dithiophosphoric acid is substantially reduced by incorporating therewith a zinc dialkyl naphthalene sulfonate and a basic alkaline earth metal petroleum sulfonate.

3,627,682

ENCAPSULATED PARTICULATE BINARY MAGNETIC TONERS FOR DEVELOPING IMAGES

Joseph P. Hall, Jr., Shavertown, and George J. Young, Dallas, both of Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 16, 1968, Ser. No. 767,977
Int. Cl. G03g 9/02
U.S. Cl. 252—62.54 21 Claims



Described and claimed are flowable, particulate, binary toners for developing magnetic images comprising a particulate hard magnetic material, e.g., Fe_3O_4 or CrO_2, and a particulate soft magnetic material, e.g., Fe, each type of material being present in substantially each toner particle.

3,627,683

DETERGENT COMPOSITION

Wolfgang Ernst Adam, Wemmel, Belgium; Alain Hardy, Paris, France; Arnvid Sverre Roald, Springfield Township, Hamilton County, Ohio, and Wahib Nassif Zaki, Brussels, Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 7, 1969, Ser. No. 874,945
Claims priority, application Netherlands, Nov. 19, 1968, 6816505
Int. Cl. C11d 7/42
U.S. Cl. 252—89 7 Claims

Detergent compositions which contain compounds bearing one or more sulfhydryl radicals as activators for enzymes which themselves do not contain sulfhydryl groups or disulfide bonds.

3,627,684

PROCESS FOR THE PRODUCTION OF WASHING, BLEACHING AND PURIFICATION AGENTS

Horst Pistor, Rheinfelden (Baden), Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Filed Jan. 22, 1969, Ser. No. 793,161
Claims priority, application Germany, Jan. 24, 1968, P 16 92 008.4
Int. Cl. C11d 7/56
U.S. Cl. 252—99 10 Claims

A washing, bleaching and cleansing agent containing an active oxygen-containing compound of a salt of boric acid is prepared by adding the active oxygen carrier to a slurry of the active washing substances, washing aids and additives shortly before introduction into a spray drier.

3,627,685

LITHOGRAPHIC PLATE FINISHERS AND CLEANERS

Frank Man-Kam Lam, East Brunswick, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 28, 1969, Ser. No. 853,965
Int. Cl. C11d 7/54
U.S. Cl. 252—100 2 Claims

This invention relates to the treatment and maintenance of lithographic printing plates. More specifically, it is concerned with finishing, cleaning, and dampening lithographic plates with aqueous solutions containing an alkali metal-polyphosphate and an inorganic oxidant to render the same more efficient.

3,627,686

MACHINE DISHWASHING COMPOSITIONS CONTAINING SODIUM POLYACRYLATE AND NTA

Philip M. Sabatelli, Cincinnati, Ohio; Charles A. Brungs, Ft. Wright, Ky.; Edwin R. Loder, Cincinnati, Ohio, and Carmen R. Sarge, Ft. Thomas, Ky., assignors to Chemed Corporation

Filed Sept. 30, 1968, Ser. No. 763,917
Int. Cl. C11d 7/16, 7/26, 7/32
U.S. Cl. 252—137 3 Claims

A machine dishwashing composition is disclosed which includes the combination of a chelating agent and a water-soluble polymer as detergent builders and specifically the combination of a water-soluble organic alkaline salt of nitrilotriacetic acid, and a water-soluble polyacrylate. Cooking and eating utensils may be cleaned by a low-foaming aqueous solution of the present machine dishwashing composition with less spotting and greater clarity. The present composition is particularly useful for sequestering hard water salts and for extending the normal water-softening capacity of machine dishwashing compositions.

3,627,687

CLEANING OF FERROUS METAL SURFACES

Fred Norman Teumac, Charlotte, N.C., and James Scott Scruggs, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 9, 1968, Ser. No. 704,265
Int. Cl. C11d 7/32
U.S. Cl. 252—152 2 Claims

The invention is based on the discovery that upon adding a polyamine having intralinear amino groups to an aqueous alkaline solution of an ammoniated or aminated polycarboxylic acid chelating agent, a new and improved metal-cleaning solution is provided. Upon bringing such cleaning solution into contact with a ferrous metal surface having hardness and/or iron oxide scale, and copper, thereon and the solution being maintained at a temperature above about 155° C. for a time sufficient to dissolve all the hardness and iron oxides, the copper is dissolved and neither precipitates from solution nor deposits on the ferrous metal surface.

3,627,688

STABILIZED AQUEOUS ENZYME CONTAINING COMPOSITIONS

Charles B. McCarty, Cincinnati, and Jim S. Berry, Springfield Township, Hamilton County, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 23, 1968, Ser. No. 786,431
Claims priority, application Philippines, Nov. 12, 1968, 9724
Int. Cl. C11d *1/72, 1/74*
U.S. Cl. 252—153 **11 Claims**

Stabilized aqueous enzyme compositions containing a protease and/or an α-amylase and a stabilizing agent selected from the group consisting of dialkyl glycol ethers; heterocyclic oxyethers; and dialkyl ketones are described. These compositions, which can also contain a nonionic or zwitterionic detergent, are useful cleaning compositions particularly in the removal of soils and stains from textile materials.

3,627,689

ISOCYANURATE AND HALOGEN-CONTAINING POLYISOCYANATES

Perry A. Argabright, and Brian L. Phillips, both of Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed June 4, 1969, Ser. No. 830,410
Int. Cl. C09k *3/00;* **C08d** *13/08*
U.S. Cl. 252—182 **11 Claims**

New halogenated polyisocyanates containing isocyanurate rings are prepared in a single step by reacting chlorinated organic compounds, especially chloromethylated aromatics with metal iodide or bromide and metal cyanate in the presence of a dipolar aprotic solvent where the mole ratio of cyanate in the metal cyanate to chlorine in the chlorine containing organic compound is from about 0.25 to less than about 0.8. The polyisocyanate compositions are useful as starting materials in the production of urethane polymers as coatings, films, foams, adhesives, etc. The compositions are especially flame retardant, and have inherent thermal stability provided by the high concentration of isocyanurate rings in the molecule and from the presence of halide groups.

3,627,690

PHOTOCHROMIC NAPHTHOPYRAN COMPOSITIONS

Joseph Casella, Framingham, and Samuel H. Stein, Lexington, both of Mass., assignors to Itek Corporation, Lexington, Mass.

Filed Oct. 1, 1969, Ser. No. 862,965
Int. Cl. G02b *5/24;* **F91v** *9/00*
U.S. Cl. 252—300 **15 Claims**

Photochromic naphthopyran compositions containing minor amounts of either a base or a weak-to-moderate acid are disclosed. Addition of the acid or base increases the fading rate of the colored naphthopyran compositions making them useful in eye protection applications such as sunglasses.

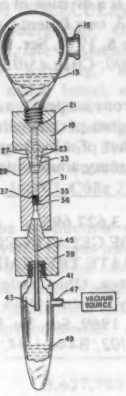
3,627,691

METHOD OF PREPARING A CALIFORNIUM-252 NEUTRON

Alexander R. Boulogne, and Jean P. Faraci, both of Aiken, S.C., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Jan. 8, 1970, Ser. No. 1,484
Int. Cl. C09k *3/00;* **G21h** *5/00*
U.S. Cl. 252—301.1 R **4 Claims**

A method of encapsulating a radioisotope wherein an open ended tube is used first to support a porous member for filtering a radioisotope precipitate from a solution and next for containing the precipitate on the porous member while heating to convert the radioisotope to a thermally stable form. The tube is then sealed at both ends providing a leaktight capsule to prevent loss of the radioisotope. This method is particularly applicable to the encapsulation of californium-252 for use as a point source of neutrons.



3,627,692

FLUOROAPATITE LASER MATERIAL DOPED WITH HOLMIUM OR THULIUM AND CHROMIUM

Robert C. Ohlmann, Palo Alto, Calif., and Robert Mazelsky, Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 28, 1968, Ser. No. 732,593
Int. Cl. C09k *1/04;* **H01s** *3/16*
U.S. Cl. 252—301.4 P **13 Claims**

A crystalline material suitable for use as a laser rod in association with pump radiation is made from a calcium or strontium fluorophosphate host which is doubly doped with holmium and chromium or thulium and chronium and which can contain charge-compensating constituent ions such as Na^+, 0^- and $(Sio_4)^{4-}$troneutrality of the crystal.

3,627,693

LAYERED CAPSULE WALLS AND A METHOD FOR MANUFACTURING THEM

Joseph A. Scarpelli, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Jan. 28, 1970, Ser. No. 6,583
Int. Cl. B01j *13/02;* **B44d** *1/16*
U.S. Cl. 252—316 **7 Claims**

A process is disclosed for performing encapsulation, en masse, in an aqueous liquid vehicle, wherein two kinds of hydrophilic polymeric material are sequentially deposited from solution onto particles of intended capsule core entities. The two kinds of hydrophilic polymeric wall materials, while individually and sequentially deposited from solution by liquid-liquid phase separation, also yield a middle-zone wherein the two kinds of material are present in a mixed combination. A preferred capsule product of this disclosed process comprises: substantially water insoluble capsule core material; polyvinyl alcohol inner capsule wall material; polyvinyl alcohol-gelatin middle-zone wall; and gelatin outer capsule wall material.

3,627,694

PRODUCTION OF AQUEOUS SUSPENSION OF MANGANESE DIOXIDE

E. Scudder Mackey, Binghamton, N.Y., assignor to General Aniline & Film Corporation, New York, N.Y.

Continuation of application Ser. No. 633,373, Apr. 25, 1967, now abandoned , which is a division of application Ser. No. 311,954, Sept. 27, 1963, now Patent No. 3,332,792. This application June 8, 1970, Ser. No. 48,801

Int. Cl. B01j *13/00*; C01g *45/02*; G03c *1/84*

U.S. Cl. 252—316 7 Claims

Production of an aqueous suspension of manganese dioxide by reaction of potassium permanganate in aqueous acid solution with a starch ether of a hydroxyalkyl-tertiary amine or a corresponding quaternary ammonium salt.

3,627,695

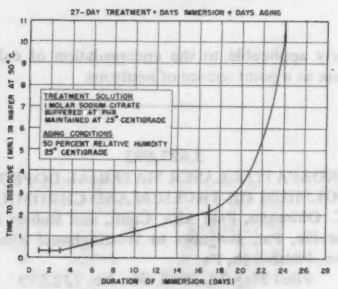
INSOLUBILIZATION OF GELATIN-CONTAINING FILM BY CITRATE TREATMENT

Joseph A. Scarpelli, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed May 5, 1969, Ser. No. 821,733

Int. Cl. B01j *13/02*; B44d *1/44*; C09h *7/00*

U.S. Cl. 252—316 12 Claims


27-DAY TREATMENT + DAYS IMMERSION + DAYS AGING
TREATMENT SOLUTION
1 MOLAR SODIUM CITRATE
BUFFERED AT PH5
MAINTAINED AT 25° CENTIGRADE
AGING CONDITIONS
50 PERCENT RELATIVE HUMIDITY
25° CENTIGRADE
TIME TO DISSOLVE 1 MIL IN WATER AT 90°C
DURATION OF IMMERSION (DAYS)

A treatment process is disclosed for gelatin-containing or proteinaceous capsule wall materials and films wherein the capsules and films which include the proteinaceous materials therein are soaked or steeped in aqueous citrate solutions for extended periods of time. The citrate treatment of this invention serves to harden the capsule wall or film material in such a way as to render it water insoluble. In various embodiments of the treatment, a final capsule or film process step is included, said step differing as to the desired or required intended use of the citrate-treated films or capsule wall material. The treated films or capsule walls can be used without drying, by drying only or by drying only and then subjecting the films or capsule walls to an aging process. The treated films or capsule walls can also be finished by drying and then subjecting them to a desiccation step similar to the aging step but under different conditions.

3,627,696

POLYPHENYL ETHER SOLDERING FLUID

Joseph J. Heithaus, Florissant; Oscar M. Muskopf, St. Louis, both of Mo.; Gedeminas J. Reinis, Rochester, N.Y., and Clarence L. Mahoney, Berkeley, Calif., assignors to Shell Oil Company, New York, N.Y.

Original application Dec. 27, 1965, Ser. No. 526,318, now abandoned. Divided and this application July 9, 1969, Ser. No. 855,438

Int. Cl. C07c *41/12*

U.S. Cl. 252—404 5 Claims

Polyphenyl ether-based fluids having improved stability and oxide solubilizing properties consisting essentially of polyphenyl ethers and a minor amount of a mixture of carboxylic acid derivatives of polyphenyl ethers.

3,627,697

HYDROPEROXIDE DIAGNOSTIC AGENTS CONTAINING A CHROMOGEN INDICATOR

Hans-Georg Rey; Hans Wielinger, and Peter Rieckmann, all of Mannheim-Waldhof, Germany, assignors to Boehringer Mannheim GmbH, Postfach, Germany

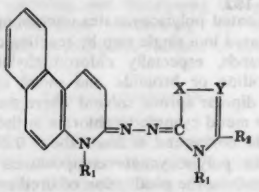
Filed Mar. 20, 1970, Ser. No. 21,493

Claims priority, application Germany, Apr. 9, 1969, P 19 17 997.6

Int. Cl. G01n *31/14*, *31/22*

U.S. Cl. 252—408 18 Claims

Diagnostic agents suitable for use in carrying out rapid analytical determinations of the presence and/or concentration of hydroperoxides, substances which react with the liberation of hydrogen peroxide or hydroperoxide, peroxidase or peroxidatively-active substances, comprising an indicator, i.e., chromogen, which is oxidized by hydrogen peroxide or hydroperoxide in the presence of peroxidase or peroxidatively-active substance to form a dyestuff, the color intensity of which is dependent on the quantity of peroxide, peroxidase or peroxidatively-active substance present in the test sample, wherein the chromogen is a compound having the formula:



wherein R_1 is lower alkyl; R_2 is hydrogen or alkyl, preferably lower alkyl, or, together with Y, represents a fused benzene or naphthalene nucleus; X is sulfur or oxygen or an alkylated imino group, preferably carrying lower alkyl groups, or a vinylene radical; and Y is a methine radical which, together with R_2, can also form a benzene or naphthalene nucleus.

3,627,698

HYDROPEROXIDE DIAGNOSTIC AGENTS CONTAINING A CHROMOGEN INDICATOR

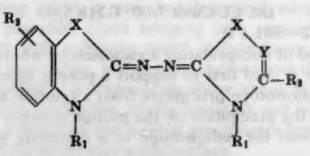
Hans-Georg Rey; Hans Wielinger, and Peter Rieckmann, all of Mannheim-Waldhof, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Continuation-in-part of application Ser. No. 762,965, Sept. 26, 1968. This application Mar. 20, 1970, Ser. No. 21,494

Int. Cl. G01n *31/14*, *31/22*

U.S. Cl. 252—408 18 Claims

Diagnostic agents suitable for use in carrying out rapid analytical determinations of the presence and/or concentration of hydroperoxides, substances which react with the liberation of hydrogen peroxide or hydroperoxide, peroxidase or peroxidatively active substances, comprising an indicator, i.e., chromogen, which is oxidized by hydrogen peroxide or hydroperoxide in the presence of peroxidase or peroxidate-active substance to form a dyestuff, the color intensity of which is dependent on the quantity of peroxide, peroxidase or peroxidate-active substance present in the test sample, wherein the chromogen is a compound having the formula:



wherein R_1 is lower alkyl; R_2 is hydrogen, a sulfonic acid group or an alkali metal sulfonate group; R_3 is hydrogen, halogen, e.g. chlorine, or lower alkyl; X is sulfur, oxygen, a carbon atom substituted with two lower alkyl groups, substituted or unsubstituted vinylene or imino, wherein said substituent is lower alkyl or aryl; and Y is nitrogen or methine which, when taken together with R_3, can form a benzene ring substituted by R_2.

3,627,699

LIQUID CRYSTAL CHOLESTERIC MATERIAL AND SENSITIZING AGENT COMPOSITION AND METHOD FOR DETECTING ELECTROMAGNETIC RADIATION

Newton N. Goldberg, Pittsburgh, Pa., and James L. Fergason, Kent, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 30, 1969, Ser. No. 820,661
Int. Cl. G01n *21/02*; G01t *1/08*
U.S. Cl. 252—408 16 Claims

Electromagnetic radiation in the frequency range of $10^{12.5}$ to 10^{17} cycles per second is detected, using a cholesteric liquid-crystal material to which there has been added, in the case of radiation of lower frequency, a suitable oil or oil-soluble dye, and in the case of radiation of higher frequency, a phototropic material such as beta-carotene or cholesteryl p-phenylazophenyl carbonate, a novel compound.

3,627,700

DIMERIZATION OF OLEFINS WITH CHROMIUM HALIDE COMPLEX CATALYST SYSTEMS

Ernest A. Zuech, Bartlesville, Okla., assignor to Phillips Petroleum Company

Continuation-in-part of application Ser. No. 635,649, May 3, 1967, now abandoned, Continuation-in-part of application Ser. No. 635,700, May 3, 1967, now abandoned. This application Nov. 22, 1968, Ser. No. 778,307
Int. Cl. C07c *3/10*
U.S. Cl. 252—429 B 11 Claims

Olefins are dimerized by contacting the olefin with a homogeneous catalyst comprising a chromium halide complex in combination with an ethylaluminum dichloride adjuvant. Additionally, a heterogeneous catalyst is prepared by depositing upon a suitable support the homogeneous combination mentioned above and contacting the olefin to produce dimers thereof.

3,627,701

OXIDATION OF ISOBUTYLENE TO METHACRYLALDEHYDE OVER COMPLEX TUNGSTEN OXIDE CATALYSTS

Donald M. Coyne, Prairie Village, and Roger P. Cahoy, Merriam, both of Kans., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Original application Apr. 12, 1966, Ser. No. 541,955, now Patent No. 3,444,240, dated May 13, 1969, which is a continuation-in-part of application Ser. No. 208,637, July 9, 1962, now abandoned, which is a continuation-in-part of application Ser. No. 247,267, Dec. 26, 1962, now abandoned, which is a continuation-in-part of application Ser. No. 247,268, Dec. 26, 1962, now abandoned, which is a continuation-in-part of application Ser. No. 247,307, Dec. 26, 1962, now abandoned. Divided and this application Sept. 16, 1968, Ser. No. 793,210. The portion of the term of the patent subsequent to Oct. 3, 1984, has been disclaimed.
Int. Cl. B01j *11/74*
U.S. Cl. 252—439 1 Claim

Isobutylene, either pure or in crude mixtures with other hydrocarbons is oxidized in vapor phase over catalysts containing the mixed oxides of copper, tellurium and tungsten, preferably within a temperature range of about 430° to 480° C., to yield methacrylaldehyde. The catalysts are coated on refractory solids of low surface area.

3,627,702

PROCESS FOR THE PRODUCTION OF POLYETHERS OF HIGH MOLECULAR WEIGHT

Robert Gehm, Limburgerhof, Germany; Ernst-Guenther Kastning, deceased, late of Assenheim, Germany (by Marie-Louise Hermine Kastning, heiress-at-law and legal representative of minor heirs), and Kurt Schneider, Limburgerhof, Germany, assignors to Badische Anilen- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Germany

Filed Aug. 12, 1969, Ser. No. 849,530
Claims priority, application Austria, Aug. 12, 1968, 7876/68
Int. Cl. C08g *23/14*
U.S. Cl. 260—2 A 7 Claims

A process for the production of high-molecular-weight polymers of 1,2-alkylene oxides using a catalyst prepared by reacting 1 mole of an alkaline earth metal hexaammoniate and/or an alkaline earth metal amide in liquid ammonia with 0.1 to 1 mole of a 1,2-alkylene oxide and 0.1 to 2 moles of cyanamide and/or dicyandiamide.

3,627,703

POLYPROPYLENE RESIN COMPOSITES AND PRODUCTION THEREOF

Katsuyoshi Kojima, Tokyo-to, and Yujiro Nakayama, Yokkaichi-shi, both of Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo-to, Japan

Filed Oct. 21, 1969, Ser. No. 868,228
Claims priority, application Japan, Oct. 31, 1968, 43/79423
Int. Cl. C08f *29/12*
U.S. Cl. 260—2.1 E 13 Claims

A polypropylene resin composite which comprises a polypropylene resin matrix that is both microscopically foamed and molecularly oriented in three dimensions and an ion-exchanging material dispersed therein, which composite is produced by a process which comprises subjecting a precursor composite comprising a solid polypropylene matrix and an ion-exchange material of greater swellability to a chemical treatment comprising an acid treatment and an alkali treatment.

3,627,704

CURABLE COMPOSITIONS OF EPOXY RESINS AND 4,6-BIS(SUBSTITUTED CARBAMYL)ISOPHTHALIC ACID

Raymond Michael Moran, Jr., Brick Town, and Robert Paul Kretow, Lakewood, both of N.J., assignors to Ciba Corporation, Summit, N.J.

Filed Oct. 23, 1969, Ser. No. 868,924
Int. Cl. C08q *30/14*
U.S. Cl. 260—2 N 3 Claims

4,6-Bis (substituted carbamyl) isophthalic acid compounds are used as latent hardeners for epoxy resins materials the cured resins therefrom are employed in high-temperature adhesives and coating applications. The hardener effect is achieved by curing at elevated temperatures.

3,627,705

COUNTERCURRENT ION EXCHANGE REGENERATION WITH SULFURIC ACID

Albert William Kingsbury, Moorestown, N.J., assignor to Sybron Corporation, Rochester, N.Y.

Filed Jan. 16, 1970, Ser. No. 3,427
Int. Cl. B01d *15/06*; C02b *1/76*
U.S. Cl. 260—2.2 R 5 Claims

A method and apparatus for regenerating cation exchange resin which is partially in the calcium form wherein dilution water is injected to prevent the precipitation of calcium sulfate in the column when sulfuric acid is used as the regenerant.

3,627,706

MINERAL-FILLED FOAM PRODUCTION

Peter R. Chant, Delft, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Filed Feb. 11, 1970, Ser. No. 10,546
Claims priority, application Great Britain, Mar. 20, 1969, 14,623/69
Int. Cl. C08g 22/44, 51/02
U.S. Cl. 260—2.5 BD 3 Claims

A method for preparing a mineral-filled polyurethane foam is disclosed, wherein a foamable polyurethane liquid is injected into a high-velocity gas stream directed towards a stream of granular-filled material to mix thoroughly and uniformly with the particles of filler.

3,627,707

THIXOTROPIC POLYVINYL CHLORIDE PLASTISOL COMPOSITION

Donald A. Giessler, and FLoyd A. Ratliff, both of Muncie, Ind., assignors to Ball Corporation, Muncie, Ind.

Filed Dec. 31, 1968, Ser. No. 789,037
Int. Cl. C08f 29/18, 45/04, 45/38
U.S. Cl. 260—2.5 P 5 Claims

A plastisol gasket-forming composition including both precipitated barium sulfate and water-ground barium sulfate having thixotropic properties so that the composition will remain where placed on a vertical surface.

3,627,708

MACROPOROUS CROSS-LINKED COPOLYMERS AND PROCESS THEREFOR

Lewis D. Morse, Princeton; Warren T. Grundner, Vincentown, and Calvin Calmon, Birmingham, all of N.J., assignors to Sybron Corporation

Filed Aug. 5, 1968, Ser. No. 750,254
Int. Cl. C08f 15/04, 47/08
U.S. Cl. 260—2.5 B 21 Claims

A macroporous organic cross-linked copolymer formed by a free-radical-type polymerization of a mixture of monomers in the presence of a precipitant which is substantially immiscible with the monomer mixture, but which is solubilized within said monomer mixture by a micelle-forming mechanism. A typical example would be a polymerization of a styrene, ethyl vinyl benzene, divinylbenzene monomer mixture in the presence of water, water being immiscible with the monomer mixture which is solubilized with sodium bis (2-ethyl hexyl) sulfosuccinate.

3,627,709

PRODUCTION OF FOAM THERMOPLASTICS USING A BLOWING AGENT AND A VISCOSITY INCREASING AGENT

Karl-Friedrich Hansen, Mannheim, and Johann Zizlsperger, Frankenthal, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Land Rhineland Pfalz, Germany

Continuation of application Ser. No. 511,970, Dec. 6, 1965, now abandoned. This application May 16, 1969, Ser. No. 825,442
Int. Cl. C08f 47/10; C08j 1/26
U.S. Cl. 260—2.5 R 7 Claims

Process for the production of expanded crystalline thermoplastics by emulsification under pressure of a polymer melt and a nonmiscible expanding agent of a comparable viscosity and releasing the pressure or cooling the unexpanded emulsion and heating it in a mold.

3,627,710

ISOCYANATE-MODIFIED NEOPRENE FOAM PROCESS

James Walter Crary, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 19, 1969, Ser. No. 834,903
Int. Cl. C08f 47/08, 47/18
U.S. Cl. 260—2.5 L 4 Claims

In the process of making polyisocyanate-modified neoprene foams it is necessary to lower the pH of the latex to within the 9.5–10.8 range prior to the polyisocyanate addition. This is conveniently accomplished by adding to the latex a strong acid salt of morpholine, diethanolamine, di-(2-propanol)amine, or ethanol(2-propanol)amine. Foams produced from such a latex have excellent resilience and load-bearing capacity.

3,627,711

FOAMABLE SYNTHETIC RESIN COMPOSITIONS

Guenter Schroeder, Ober Ramstadt; Wolfgang Gaenzler, Darmstadr, and Willy Bitsch, Welterstadt, Darmstadt, all of Germany, assignors to Rohm & Haas G.m.b.H., Darmstadt, Germany

Filed Dec. 11, 1969, Ser. No. 884,383
Claims priority, application Germany, Dec. 27, 1968, P 18 17 156.7
Int. Cl. C08f 47/10, 27/34, 45/44
U.S. Cl. 260—2.5 N 10 Claims

Foamable synthetic resin compositions of (1) a polymer comprising at least 20 percent by weight of acrylic acid and/or methacrylic acid and (2) formamide or a monoalkyl formamide as a foaming agent. Methods of making such compositions. Moisture-resistant foams prepared by heating such foamable compositions at elevated temperatures.

3,627,712

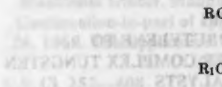
ACCELERATORS FOR ELASTOMERS IN CONTACT WITH POLYESTER FIBERS

Henry J. Leibu, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

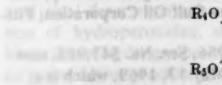
Filed Apr. 11, 1969, Ser. No. 815,488
Int. Cl. C08c 11/66; B32b 27/36; C08d 13/00
U.S. Cl. 260—5 11 Claims

A vulcanization accelerator for hydrocarbon backbone sulfur-curable elastomers which can be used in elastomer formulations in contact with a fibrous polyester material without causing deterioration of the polyester material. The accelerator can be

(1) A thioperoxydiphosphate of the formula:

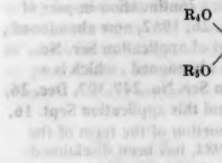


(2) A zinc phosphorodithioate of the formula:



or

(3) A basic zinc phosphorodithioate of the formula:



where R, R_1, R_2, R_3, R_4, and R_5 can independently be alkyl, cycloalkyl, alkenyl, and aralkyl having 3–20 carbon atoms.

A promoter which does not yield during vulcanization or on aging a primary or secondary amine or amine fragments can be used with the accelerator.

3,627,713

METHOD OF PREVENTING AGGLOMERATION OF POWDERED UREA-FORMALDEHYDE RESINS

Iwao Maruta, Funabashi-shi, Chiba, and Akihiko Iida, Chibashi, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Oct. 2, 1968, Ser. No. 764,630
Claims priority, application Japan, Oct. 4, 1967, 42/63928. The portion of the term of the patent subsequent to June 18, 1985, has been disclaimed.
Int. Cl. B32b *27/06*; C08b *21/32*; C08g *37/32*; C09k *3/18*
U.S. Cl. 260—15 8 Claims

A method of preventing agglomeration of powdered urea-formaldehyde resins which comprises incorporating therein an antiagglomerating agent comprising a nondissociative water-soluble macromolecular compound and a surface active agent.

3,627,714

WATER-SOLUBLE POLYURETHANE-UREAS

Bernard A. Merkl, Detroit, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Nov. 25, 1969, Ser. No. 879,915
Int. Cl. C08g *22/14*
U.S. Cl. 260—18 TN 22 Claims

Water-soluble urethane-urea polymers resistant to moisture absorption in humid atmospheres are prepared by reacting a blend of a polyoxyalkylene glycol and a polyoxyethylene adduct of polyoxypropylene glycol with an excess of organic polyisocyanates to form isocyanate-terminated prepolymers which are chain extended with an organic diamine. The water-soluble polymers are suitable for use as a coating in textile sizing operations, as a water-removable temporary protective coating and may be cast into films, extruded, injection molded and extrusion blow molded.

3,627,715

CROSS-LINKABLE COMPOSITIONS COMPRISING AN ETHYLENICALLY UNSATURATED POLYMER AND A SULFUR DIOXIDE ADDITION PRODUCT

Karl Brack, Hyde Park, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of application Ser. No. 703,847, Jan. 29, 1968. This application Sept. 8, 1970, Ser. No. 70,602
Int. Cl. C07d *51/70*; C08c *5/00*; C08f *27/06*
U.S. Cl. 260—22 T 11 Claims

The disclosed compositions contain an ethylenically unsaturated polymer and an addition product of sulfur dioxide with certain bicyclic tertiary amines, representative of which is triethylenediamine. The compositions may be cross-linked by the application of heat.

3,627,716

POLYVINYL CHLORIDE RESIN STABILIZER COMBINATION COMPRISING A TETRAVALENT ORGANOTIN MERCAPTOCARBOXYLIC ACID COMPOUND AND A DIVALENT STANNOUS TIN SALT

Seymour Cohen, Brooklyn, N.Y., assignor to Argus Chemical Corporation, Brooklyn, N.Y.

Filed July 11, 1968, Ser. No. 743,972
Int. Cl. C08f *45/62*
U.S. Cl. 260—23 XA 25 Claims

This invention provides a polyvinyl chloride resin stabilizer combination which decreases discoloration of the resin when heated to 350° F. comprising a tetravalent di(alkyl and/or cycloalkyl)-tin alpha- or beta-mercapto carboxylic acid ester composition and a synergizing amount of bivalent stannous tin salt. This invention further provides polyvinyl chloride resin compositions containing the above stabilizer composition and having as a result increased resistance to discoloration when heated.

3,627,717

VINYL CHLORIDE EMULSION POLYMERIZATION, COPOLYMERIZATION, AND PRODUCT THEREFROM

Ludwig Kuhnen, Marl, Germany, assignor to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed Jan. 9, 1969, Ser. No. 790,152
Claims priority, application Germany, Jan. 20, 1968, Apr. 18, 1968, P 17 20 430.7; P 17 70 223.7
Int. Cl. C08f *3/30*, *29/18*, *45/54*
U.S. Cl. 260—23 EM 8 Claims

Vinyl chloride polymer and copolymer compositions are prepared by emulsion polymerization of vinyl chloride in the presence of sodium salts of α-sulfo-fatty acids. The compositions and methods are improved by emulsifying the vinyl chloride in the presence of sodium salts of a α-sulfo-fatty acids having 12 to 24, and preferably 12 to 18 carbon atoms, wherein the sodium salts of the α-sulfo-fatty acid have a concentration of 0.6 to 4.0, and preferably 0.8 to 3.0 percent by weight based on the monomers and the polymerization is performed at a pH value of 6 to 11, and preferably 7.0 to 10.0. Alkali salts are added, the emulsion spray-dried, and the recovered solid polymer product is found to possess improved heat stability when stabilized with barium, cadmium, or lead stabilizers.

3,627,718

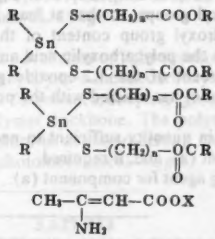
POLYVINYL CHLORIDE COMPOSITIONS FOR THE PRODUCTION OF ANTISTATIC HOLLOW BODIES AND BLOWN FILMS

Friedrich Seifert, and Dieter Carla, both of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

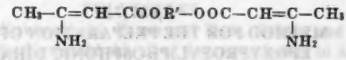
Filed Oct. 14, 1969, Ser. No. 866,369
Claims priority, application Germany, Oct. 18, 1968, P 18 03 787.1
Int. Cl. C08f *29/18*
U.S. Cl. 260—23 XA 9 Claims

Polyvinyl chloride compositions are made particularly useful for the production of antistatic hollow bodies and blown films by adding:

a. one to three percent by weight of one or more compounds of the formulas-



or



wherein R is an alkyl with four to 12 carbon atoms, *n* is a whole number from one to four, X is an alkyl or alkenyl group with eight to 20 and preferably 16 to 18 carbon atoms, and R′ is an alkylene group with two to eight and preferably two to four carbon atoms which can contain a hetero-atom, including oxygen or sulfur;

b. 0.4 to 2.5 percent and preferably 0.6 to 1.5 percent by weight of one or more esters of a saturated or unsaturated fatty acid with seven to 30 carbons atoms and a monovalent alcohol with eight to 31 carbon atoms and/or one or more partial esters of such a fatty acid and a polyvalent alcohol with two to four carbon atoms or a polyalkylene glycol of two to 10 ethylene oxide or propylene oxide units; and

c. 0.4 to 2.5 and preferably 0.6 to 1.5 percent by weight of one or more higher alcohols with nine to 28 carbon atoms or

such higher alcohols having oxyalkylation products with 1–10 ethylene oxide or propylene oxide units, wherein the total weight percent of components (b) and (c) combined is not over three percent and all indicated percentages by weight refer to the total mixture.

3,627,719

COMPOSITIONS CONTAINING POLYURETHANE RESIN TREATING AGENTS DERIVED FROM MANNICH BASE CONDENSATES

Lucien Sellet, Saddle River, N.J., assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Dec. 31, 1968, Ser. No. 788,340. The portion of the term of the patent subsequent to Aug. 19, 1986, has been disclaimed.

Int. Cl. C08g *37/24, 41/00*

U.S. Cl. 260—29.2 TN **31 Claims**

Compositions containing polyurethane resin treating agents derived from Mannich Base condensates are used to improve properties of fiber, textile, paper, leather and other substrates. The treating agents are alkylolated polyurethane resins obtained by alkylolation of the reaction product of a Mannich Base condensate and a urethane prepolymer. Mannich Base condensates are prepared by reaction of alkanolamines, aldehydes, and amino resin bases.

3,627,720

EPOXIDE-CONTAINING COMPOSITIONS

Ian Geoffrey Hinton, Whittlesford, and Bernard Peter Stark, Stapleford, both of England, assignors to CIBA Limited, Basel, Switzerland

Filed Feb. 2, 1968, Ser. No. 702,532

Claims priority, application Great Britain, Feb. 13, 1967, 6,762/67

Int. Cl. C08g *51/24;* **C23b** *13/00*

U.S. Cl. 260—29.3 **16 Claims**

Curable compositions comprising:

a. a material formed by heating a liquid mixture of a polycarboxylic acid anhydride with an epoxide alcohol free from carboxyl groups, so that at least 40 percent of the alcoholic hydroxyl group content of the epoxide alcohol is esterified by the polycarboxylic acid anhydride but not more than 25 percent of the 1,2-epoxide group content of the epoxide alcohol has reacted with the polycarboxylic acid anhydride,

b. a base in quantity sufficient to neutralize at least some of component (a), and, if required,

c. a curing agent for component (a).

3,627,721

METHOD FOR THE PREPARATION OF (CIS-1,2-EPOXYPROPYL)PHOSPHONIC DIHALIDE

Raymond A. Firestone, Fanwood, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 2, 1969, Ser. No. 789,071

Int. Cl. C07d *9/42*

U.S. Cl. 260—348 R **3 Claims**

A method for the preparation of (cis-1,2-epoxypropyl)phosphonic dihalide which comprises treating propylene oxide with phosphorus trihalide in the presence of a suitable oxidizing agent. The dihalide product thus obtained has utility as an intermediate inasmuch as it may be subjected to hydrolysis to afford the corresponding (cis-1,2-epoxypropyl)phosphonic acid or the salts thereof. The said (cis-1,2-epoxypropyl)phosphonic acid product and its salts are antibiotics which have utility in inhibiting the growth of gram-negative and gram-positive pathogenic bacteria.

3,627,722

POLYURETHANE SEALANT CONTAINING TRIALKYLOXYSILANE END GROUPS

George M. Selter, Golden Valley, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of application Ser. No. 746,305, , now abandoned. This application May 28, 1970, Ser. No. 41,597

Int. Cl. C08g *22/08*

U.S. Cl. 260—37 N **17 Claims**

A polyurethane sealant composition containing terminal—NCO groups, at least 5 percent of the —NCO groups being end-blocked with $-Si(OR)_3$ groups, where R is a lower alkyl. The terminal silane groups provide adhesion retention of the sealant to substrates such as metal or glass even after prolonged water immersion.

3,627,723

FILLER LOADED ELASTOMERIC COMPOSITIONS HAVING IMPROVED EXTRUDABILITY AND PHYSICAL PROPERTIES

Thomas Joseph Kealy, and William John Keller, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 26, 1968, Ser. No. 787,250

Int. Cl. C08c *11/14, 11/18*

U.S. Cl. 260—41.5 R **12 Claims**

An elastomeric composition containing (a) an α-olefin/nonconjugated diene copolymer, (b) a clay or carbon black filler and (c) a surfactant. The surfactant improves both the extrudability and vulcanizate properties of the copolymer.

3,627,724

RUBBER COMPOSITIONS

Donald H. Lambert, Marlboro, Mass., assignor to Cabot Corporation, Boston, Mass.

Filed Dec. 3, 1969, Ser. No. 881,889

Int. Cl. C08d *9/00*

U.S. Cl. 260—41.5 A **6 Claims**

This disclosure relates to the use of certain disilazane treated colloidal silicas as processing aids for rubbery copolymers of styrene and butadiene.

3,627,725

BIS (3,5-DIALKYL-4-HYDROXYBENZYL) MALONIC ESTERS FOR STABILIZING POLYMERS

Jack C. Gilles, Shaker Heights, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Original application Sept. 8, 1966, Ser. No. 577,847. Divided and this application Dec. 23, 1968, Ser. No. 804,035

Int. Cl. C08d *11/04;* **C08f** *45/58*

U.S. Cl. 260—45.85 **8 Claims**

Olefin polymers are effectively stabilized against oxidative degradation by the incorporation therein of small amounts of bis(3,5-dialkyl-4-hydroxybenzyl)malonic esters. Polyethylene and polypropylene stability is markedly improved by the addition of a stabilizing amount of diethyl-α,α-(3,5-di-t-butyl-4-hydroxybenzyl)malonate.

3,627,726

POLYURETHANE COATINGS HAVING INTUMESCENT PROPERTIES

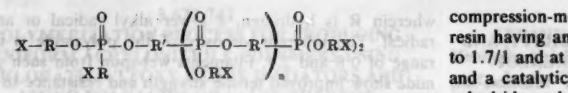
Arthur J. Krawczyk, Cheektowaga, N.Y., assignor to Textron Inc.

Filed Jan. 14, 1969, Ser. No. 791,136

Int. Cl. C08g *22/20;* **C09k** *3/28*

U.S. Cl. 260—45.7 P **15 Claims**

There is disclosed compositions having intumescent properties and containing a material of the formula



wherein R and R′ are alkylene of 1 to 3 carbon atoms, X is chlorine or bromine, and *n* is 1 to 4, and a polyurethane made by reaction of bis(2-isocyanatoethyl) fumarate and one or more polyhydroxy materials having a molecular weight of up to about 500 on a total carbon, hydrogen and oxygen basis.

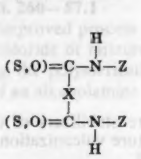
3,627,727

SUBSTITUTED DICARBOXYLIC ACID DIHYDRAZIDES AND POLYOLEFIN COMPOSITIONS CONTAINING THEM

Clarence E. Tholstrup, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 18, 1968, Ser. No. 784,921
Int. Cl. C08f *45/60*
U.S. Cl. 260—45.8 N **11 Claims**

A new class of substituted dicarboxylic acid dihydrazides is disclosed having utility in polymeric materials to inhibit the pro-oxidant effects of certain metals. They are particularly effective in polyolefins which come into contact with copper. The substituted dicarboxylic acid dihydrazides are represented by the formula



wherein X is divalent organic radical, and

Z is $-NHR$, $-N(R^1)_2$.

or

3,627,728

DIARYL-P-PHENYLENEDIAMINE STABILIZERS FOR PEROXIDE-CURED POLYETHYLENE

Antonio H. Fernandes, Newark, and Charles E. McCormack, Wilmington, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 4, 1968, Ser. No. 781,262
Int. Cl. C08f *27/00, 27/22, 45/60*
U.S. Cl. 260—45.9 R **1 Claim**

In a process for producing cross-linked polyethylene by (1) mixing polyethylene with 1 to 10 parts of a tertiary organic peroxide and (2) heating the mixture to effect cross-linking, the improvement of adding to the mixture before the cross-linking step about from 0.25 to 2 parts of a stabilizer which is an N,N′-diaryl-p-phenylenediamine, all parts being by weight per 100 parts of polyethylene. A preferred diamine stabilizer weightper is that prepared by condensing 1 mole of hydroquinone with at least 2 moles of an amine mixture consisting of 75 to 90 percent by weight of o-toluidine and 25 to 10 percent by weight of technical mixed xylidines.

3,627,729

CATALYZED SILICONE RESIN MOLDING COMPOSITION

Brian Robert Trego, Glamorgan, Wales, assignor to Midland Silicones Limited, Reading, Berkshire, England

Filed July 27, 1970, Ser. No. 58,703
Claims priority, application Great Britain, July 30, 1969, 38,157/69
Int. Cl. C08f *11/04*
U.S. Cl. 260—46.5 R **12 Claims**

A mixture of organosiloxane resin and certain catalysts has been found to be particularly useful in transfer-molding and compression-molding operations. The mixture is a siloxane resin having an organic substituent/silicon ratio of from 1/1 to 1.7/1 and at least 0.25 percent by Si bonded —OH groups, and a catalytic amount of a mixture of (a) carboxylic acid anhydride and (b) lead carbonate, lead monoxide or a mixture thereof.

3,627,730

CURABLE EPOXY RESIN COMPOSITIONS CONTAINING PHTHALAMIC ACID-TYPE CURING AGENTS

Raymond Michael Moran, Jr., Brick Town, and Robert Paul Kretow, Lakewood, both of N.J., assignors to Ciba Corporation, Summit, N.J.

Filed Nov. 28, 1969, Ser. No. 880,960
Int. Cl. C08g *30/12*
U.S. Cl. 260—47 CA **7 Claims**

Certain phthalamic acid compounds are used as latent hardeners for epoxy resin materials. The hardener effect is achieved by curing at elevated temperatures. The compositions are useful as adhesives and in coating applications.

3,627,731

REACTION OF POLYMETHYLBENZENES AND CARBON TETRACHLORIDE

Diana M. Curcio, Blawnox, Pa., and John M. Jarvie, Wilbraham, Mass., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed May 13, 1969, Ser. No. 824,309
Int. Cl. C07c *25/14*
U.S. Cl. 260—651 R **2 Claims**

This disclosure concerns the process of reacting carbon tetrachloride with polymethylbenzenes at a temperature above about 270° C. α-chloroparaxylene is prepared from paraxylene.

3,627,732

LIGHT-SENSITIVE POLYESTERS

John A. Ford, Jr.; Robert C. McConkey, and Thomas M. Laakso, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 1, 1969, Ser. No. 846,952
Int. Cl. C08g *17/10*
U.S. Cl. 260—75 UA **10 Claims**

There is described a novel class of light-sensitive polyesters containing a 1-arylmethylidyne-3-indenecarboxylate group or a 5-arylmethylidyne-3-furanonecarboxylate group as an integral part of the polymer backbone. The polymers are insolubilized upon exposure to actinic radiation and are useful in the preparation of photomechanical images.

3,627,733

METHOD FOR PARTICULARIZING THERMOPLASTIC POLYESTERS

Akira Ioka, Kawasaki-shi; Tsuneyuki Kato, Tokyo, and Yutaka Toyoda, Kawasaki-shi, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Original application June 10, 1964, Ser. No. 374,173, now Patent No. 3,377,323. Divided and this application Dec. 5, 1967, Ser. No. 687,974
Int. Cl. C08g *53/03;* **C08f** *43/03*
U.S. Cl. 260—75 T **6 Claims**

A method for particulating a thermoplastic polyester which has a solubility parameter in water of at least 10, and which is insoluble in water at the boiling point of water at normal pressure, such as polyethylene terephthalate, said method comprising heating a mass of the polyester in an autoclave solely in the presence of water up to the temperature that is lower than the melting point of the polyester to dissolve said thermoplastic polyester in the water and cooling or spraying through a nozzle the contents of the autoclave to produce a powder of the polyester.

3,627,734

POLYESTER FIBER IMPROVED IN DYEABILITY, AND PROCESS FOR THE PREPARATION THEREOF

Shigehiro Ohuchi; Chikara Sano, both of Mishima-shi, Shizuoka-ken, and Elichi Hayashi, Ehime-ken, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Oct. 8, 1969, Ser. No. 864,904
Claims priority, application Japan, Oct. 15, 1968, 43/74677
Oct. 15, 1968, 43/74678
Int. Cl. C08g *17/14, 39/04*
U.S. Cl. 260—75 N 5 Claims

Polyester fibers containing acid dyes are rendered light fast by incorporating into the polyester melamine, or isomelamine, or various alkyl, aralkyl, cycloalkyl amino, substituted amino and other addition products thereof. The present invention relates to a polyester fiber which is dyeable with an acid dyestuff, and to a process for the preparation thereof.

3,627,735

POLYURETHANE ELASTOMERIC-SHAPED ARTICLES CONTAINING REACTIVE SITES

Louis E. Trapasso, 214 Jefferson Ave., Westfield, N.Y.

Continuation-in-part of application Ser. No. 537,279, Mar. 25, 1966, now abandoned. This application Nov. 12, 1969, Ser. No. 876,025
Int. Cl. C08g *22/16, 51/58*
U.S. Cl. 260—77.5 AM 14 Claims

Polymeric elastomers are prepared by chain extension of urethane prepolymer with guanidine. The imino hydrogen in the elastomeric chain is reactive toward isocyanate groups, thereby enabling cross linking and the direct chemical attachment of additives such as dye sites, antioxidants and the like directly to the polymer backbone either prior to or after article forming.

3,627,736

POLYAMIDES FROM ISOPHORONE DIAMINE, HEXAMETHYLENE DIAMINE, ISOPHTHALIC ACID AND TEREPHTHALIC ACID

Alaric Louis Jeffrey Raum, and Prem Sagar Thukral, both of 2 Castle Precinct, Llandough, Cowbridge, Glamorgan, Wales

Continuation-in-part of application Ser. No. 725,126, Apr. 29, 1968, now abandoned. This application May 28, 1970, Ser. No. 41,556
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R 4 Claims

A tough transparent amorphous polyamide based on isophthalic acid, terephthalic acid, hexamethylene diamine to isophorone diamine wherein 5 to 50 moles percent of the diamines are based on isophorone diamine and at least 50 moles percent of the diamines are based on hexamethylene diamine. The polyamide has good impact strength, resistance to boiling water and little tendency to absorb water.

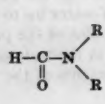
3,627,737

FILAMENTS WET-SPUN FROM VISCOSITY-STABILIZED AROMATIC POLYAMIDES

Ralph W. Smith, Gulf Breeze, Fla., assignor to Monsanto Company, St. louis, Mo.

Filed Dec. 19, 1968, Ser. No. 785,370
Int. Cl. C08g *20/38*
U.S. Cl. 260—78 R 3 Claims

Aromatic polyamides are advantageously viscosity-stabilized by the presence during polymerization of a stabilizing amount of a compound of the formula



wherein R is hydrogen, a lower alkyl radical or an aryl radical. The inherent viscosity of the polyamide is in the range of 0.8 and 2.4. Filaments wet-spun from such polyamide show improved tensile strength and resistance to abrasion.

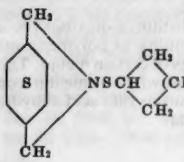
3,627,738

3-CYCLOALKYLTHIO-3-AZABICYCLO[3.2.2]NONANES AS INHIBITORS

John Joseph D'Amico, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Filed Mar. 9, 1970, Ser. No. 17,970
Int. Cl. C08f *27/06*; C07d
U.S. Cl. 260—79.5 B 21 Claims

Compounds of the formula



wherein *n* is two to nine which are stabilizers of organic compounds and inhibitors of premature vulcanization.

3,627,739

POLYCYCLODELFIN POLYMERIZATION PROCESS AND PRODUCTS

Paul A. Devlin, Lafayette; Eugene F. Lutz, Walnut Creek, and Robert J. Patten, Pleasant Hill, all of Calif., assignors to Shell Oil Company, New York, N.Y.

Filed Aug. 13, 1970, Ser. No. 63,661
Int. Cl. C08f *15/04, 7/02*
U.S. Cl. 260—88.2 D 10 Claims

Heat curable polycycloolefin compositions comprising (1) a mixture of at least one polycycloolefin having a strained carbocyclic ring, and (2) at least one oxyhalide of molybdenum or tungsten containing at least three atoms of halogen per molecule, which compositions are curable to tough hard products.

3,627,740

PROCESS FOR INCREASING THE MOLECULAR WEIGHT OF UNSATURATED POLYMERIC HYDROCARBONS

Johannes Schafer; Frederico Engel, and Gerhard Berg, all of Marl, Germany, assignors to Chemische Werke Huls A.G., Marl, Germany

Continuation of application Ser. No. 534,550, Oct. 14, 1965, now abandoned. This application Feb. 9, 1970, Ser. No. 9,106. Claims priority, application Germany, Oct. 14, 1964, P 14 95 387.8
Int. Cl. C08f *1/56*
U.S. Cl. 260—80.78 5 Claims

In the production of polydiolefins produced on the basis of Ziegler catalysts wherein the metallic compound of the Ziegler catalyst is from groups IV or V of Mendeleef's Periodic Table, a subsequent step is incroporated which comprises adding to the reaction solution after the desired conversion has been reached, a compound containing active hydrogen, such as an acid, in amounts of 0.002–2 mols per mol of the cocatalyst, e.g., triisobutyl aluminum, the degree of increase of the molecular weight corresponding to the amount of added compound containing active hydrogen.

3,627,741

POLYMERIZATION PROCESS FOR PRODUCING UNIFORM ACRYLONITRILE POLYMERS USING CHLORATE/SULFOXY REDOX INITIATORS AND AMINO POLYACIDS OR SALTS THEREOF

Luigi Patron, and Sergio Lo Monaco, both of Venezia, Italy, assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 22, 1967, Ser. No. 662,314
Int. Cl. C08f *3/76, 15/22*
U.S. Cl. 260—85.5 7 Claims

The use of additive compounds such as ethylenediamine tetracetic acid, diethylenetriaminepentaacetic acid and nitrilotriacetic acid and their water-soluble salts has been found to enhance the uniformity of the polymerization of vinyl monomers when initiated by a redox catalyst system comprising chlorate ions and reducing sulphoxy ions at pH below about 4.

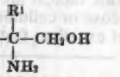
3,627,742

ALKANOLAMINES IN VINYL CHLORIDE SUSPENSION POLYMERIZATION

Harry F. Kruse, Terre Haute, Ind., assignor to Commercial Solvents Corporation, New York, N.Y.

Filed Oct. 30, 1969, Ser. No. 872,763
Int. Cl. C08f *1/60, 1/80*
U.S. Cl. 260—87.1 6 Claims

An improved process for the suspension polymerization of vinyl chloride or mixtures thereof with vinyl acetate by conducting the polymerization in the presence of from 0.2–2.0 phm of an alkanolamine corresponding to the formula



where R is hydrogen or an alkyl group of one to two carbon atoms and R^1 is hydrogen or a methyl radical thereby reducing fisheye formation, and improving thermal stability.

3,627,743

PHOTORESIST POLYMER AND PROCESS FOR ITS PREPARATION

Ram K. Agnihotri, Fishkill; Frank P. Hood, Poughkeepsie, and Lewis G. Lesoine, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 2, 1969, Ser. No. 854,680
Int. Cl. C08f *27/00*
U.S. Cl. 260—89.1 4 Claims

The resolution of cinnamate photoresist polymers is improved by dissolving the polymers in an inert solvent and treating the dissolved polymer with base such as an alkali metal hydroxide to increase the molecular weight and narrow the molecular weight distribution.

3,627,744

METHOD FOR POLYMERIZING VINYL HALIDE POLYMERS

Byrd Hopkins, Longmeadow, and Robert A. Bonsall, Wilbraham, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Sept. 12, 1968, Ser. No. 759,309
Int. Cl. C08f *1/11, 3/30, 15/00*
U.S. Cl. 260—87.5 6 Claims

In a substantially isothermal process for the polymerization of vinyl halide monomer formulations in aqueous dispersion, the desired polymerization temperature is maintained by heat-exchange contact with the liquid phase, by condensation and return of vapors and by injection of a relatively low temperature inert liquid. Stable dispersion for the suspension/reflux polymerization temperature may be enhanced by use of a mixture of a cellulose ether, a partially hydrolyzed polyvinyl acetate and a sorbitan fatty acid ester.

3,627,745

TERMINATION OF DIENE POLYMERIZATION

Henry L. Hsieh, Bartlesville, Okla., and Francis X. Mueller, Jr., Louisville, Ky., assignors to Phillips Petroleum Company

Filed June 29, 1970, Ser. No. 50,956
Int. Cl. C08d *304, 308, 138*
U.S. Cl. 260—94.7 4 Claims

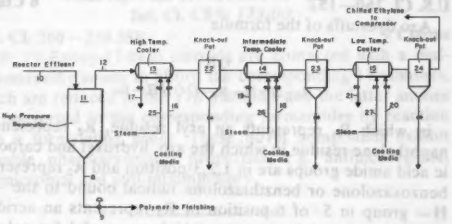
A method of terminating the polymerization of monomers in which polymerization there is formed a metal-terminated polymer by introducing into the reaction mixture a lactone.

3,627,746

LDPE RECYCLE SYSTEM DEFOULING METHOD

Charles D. Beals; George I. Fitzpatrick, and Kim L. O'Hara, all of Baton Rouge, La., assignors to Esso Research and Engineering Company

Filed May 25, 1970, Ser. No. 41,242
Int. Cl. C08f *3/04*
U.S. Cl. 260—94.9 P 5 Claims



A series of recycle coolers in a high-pressure polyethylene system are defouled by circulating ethylene feed using a compressor through the polyethylene system without addition of initiator and through the series of recycle coolers and maintaining during the sequential heating of each of said series of recycle coolers a temperature at the inlet of the compressor of the circulating feed less than the design temperature of the compressor which may be between about 150° to 225° F.

3,627,747

MIXED CHROMIUM COMPLEXES OF A PHENYLAZONAPHTHYL DYESTUFF AND A PHENYLAZOPHENYL DYESTUFF

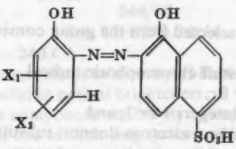
Claude Marie Henri Emile Brouard, Sotteville les Rouen, France, assignor to Ugine Kuhlmann, Paris, France

Filed Jan. 22, 1969, Ser. No. 793,174
Claims priority, application France, Jan. 25, 1968, 137335
Int. Cl. C09b *45/06, 45/16*; D06p *1/10*
U.S. Cl. 260—145 A 2 Claims

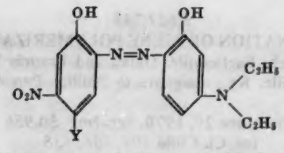
Mixed chromium complexes are provided of the type:

(I)—CR—(II)

wherein (I) represents the residue of a monoazo dyestuff of the formula:



in which X_1 and X_2 each represent a hydrogen or chlorine atom or an alkyl or nitro group, (II) represents the residue of a monoazo dyestuff of the formula:



in which Y represents a hydrogen or chlorine atom. These complexes are suitable for dyeing animal fibers, synthetic fibers or mixtures thereof and the color shades obtained have good fastness to rubbing and wet tests and also have an excellent fastness to light.

3,627,748

MONODAZO PIGMENTS CONTAINING A BENZOXAZOLONE OR BENZITHIAZALONE RADICAL

Armand Roueche, Neu-Allschwil; Willy Mueller, Riehen, and Rudolf Mory, Dornach, all of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Filed Dec. 24, 1968, Ser. No. 786,727

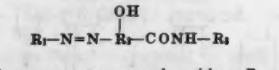
Claims priority, application Switzerland, Jan. 3, 1968, 7/68

Jan. 12, 1968, 505/68, Nov. 13, 1968, 16920/68

Int. Cl. C09b *21/36*

U.S. Cl. 260—152 **6 Claims**

Azo dyestuffs of the formula



in which R_1 represents an aryl residue, R_2 represents a naphthalene residue in which the azo, hydroxyl and carboxylic acid amide groups are in 1,2,3-position and R_3 represents a benzoxazolone or benzthiazolone radical bound to the —N-H— group in 5- of 6-position or R_3 represents an acridone radical are valuable pigments which are useful for coloring plastic masses in orange to red shades of high fastness to light and migration.

3,627,749

MONO-AND DISAZO DYESTUFFS CONTAINING TRIAZINYLUREYLENE GROUPS

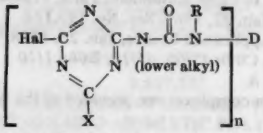
Hans Ackermann; Herbert Seiler, and Hubert Meindl, all of Riehen, Switzerland, assignors to J. R. Geigy A.G., Basel, Switzerland

Continuation of application Ser. No. 517,998, Jan. 3, 1966, now abandoned , and a continuation-in-part of 380,677, July 7, 1964, now abandoned. This application Nov. 8, 1968, Ser. No. 800,300. Claims priority, application Switzerland, July 10, 1963, 8591/63, Aug. 19, 1963, 10113/63, Jan. 8, 1965, 265/65

Int. Cl. C09b *62/04, 62/06, 62/08*

U.S. Cl. 260—153 **6 Claims**

Reactive dyestuffs of the formula



wherein —N— is connected to a ring carbon of D;

R is a member selected from the group consisting of H and lower alkyl;

D is an azo dyestuff chromophoric radical

Hal is F, Cl, or Br;

n is one of the integers 1 or 2; and

X is a monovalent electron-donnor substituent, selected from the group of lower alkoxy, phenoxy, halogen-substituted phenoxy, lower alkyl-substituted phenoxy, lower alkoxy-substituted phenoxy, lower alkylthio, phenylthio, halogen-substituted phenylthio, lower alkyl-substituted phenylthio, lower alkoxy-substituted phenylthio, lower alkylamino, di(lower)alkylamino, phenylamino, N-lower alkyl-N-phenylamino, N-lower alkyl-N-halogen-phenylamino, N-lower alkyl-N-lower alkylphenylamino, N-lower alkyl-N-lower alkoxyphenylamino, piperidino or morpholino, halogen being chloro or bromo. These dyes are suitable for the dyeing of natural and synthetic polyamide fibers as well as for textile fibers containing hydroxyl groups, particularly for natural or regenerated cellulose fibers. The obtained dyeings and prints are distinguished by excellent wet fastness properties and good fastness to light.

3,627,750

AZO PIGMENTS

Karl Ronco, Riehen, Switzerland, assignor to Ciba Limited, Basel, Switzerland

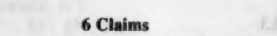
Filed Dec. 24, 1968, Ser. No. 786,751

Claims priority, application Switzerland, Jan. 10, 1968, 332/68

Int. Cl. C09b *29/26;* **D06p** *1/08*

U.S. Cl. 260—174 **2 Claims**

Azo dyestuffs of the formula



in which R_1 and R_3 each represents an aromatic radical and R_2 represents a hydroxynaphthalene radical in which the azo, hydroxyl and carboxylic acid amide groups are in the 1,2,3-position or R_2 represents the radical of an enolised or enolisable ketomethylene compound, and in which one of the radicals R_1 or R_3 possesses a group of formula $-NHCOCONHR_4$ in which R_4 represents a hydrogen atom an alkyl or aryl radical or an azo dyestuff radical are valuable pigments which color rayon and viscose or cellulose ethers and esters in yellow to red shades of excellent fastness to migration.

3,627,751

BASIC AZO DYESTUFFS CONTAINING ETHERIFIED HYDROXYLAMINE GROUPS

Gert Hegar, Schoenenbuch, and Visvanathan Ramanathan, Basel, both of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Filed Mar. 28, 1968, Ser. No. 717,011

Claims priority, application Switzerland, Apr. 4, 1967, 4743/67

Int. Cl. C09b *1/16, 29/08, 29/36*

U.S. Cl. 260—205 **6 Claims**

Basic dyestuffs that are free from acidic groups imparting solubility in water which contain at least one etherified hydroxylamino residue which is linked through the nitrogen atom to a carbon atom of the dyestuff molecule, the corresponding quaternated dyestuffs and double salts thereof which dyestuffs one useful for dyeing syntheric fibers in strong level shades with good light fastness and good general fastness properties with good reserve to natural polyamide fibers.

3,627,752

WATER-INSOLUBLE MONOAZO DYESTUFFS

Dieter Cornelius, 47 Hebbelstrasse, 61 Darmstadt-Arheilgen; Hanswilli von Brachel, 11 Gutenbergstrasse, 605 Offenbach/Main, and Heinz Bender, Kirchgasse, 6 Bergen-Enkheim, all of Germany, assignors to Cossella Farbwerke Mainkur Aktiengesellschaft Frankfurt am Main, Germany

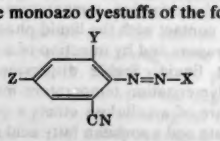
Filed Jan. 16, 1969, Ser. No. 791,773

Claims priority, application Germany, Jan. 19, 1968, P 17 19 066.8

Int. Cl. C07c *107/06, 107/08;* **C09b** *29/06*

U.S. Cl. 260—205 **3 Claims**

Water-insoluble monoazo dyestuffs of the formula:



wherein Y is alkylsulfonyl of one to two carbon atoms or nitro, Z is alkylsulfonyl of one to two carbon atoms or cyano, at least one of Y and Z being said alkylsulfonyl group, and X is the residue of a coupling component free from water-solubilizing groups, said dyestuffs being particularly useful for dyeing and printing synthetic fibers.

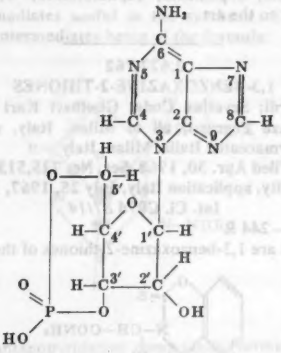
3,627,753

ISO-ADENOSINE-3',5'-MONOPHOSPHORIC ACID AND ITS SALTS

Theodore Posternak, Geneva, Switzerland; Georges (Dorde) Cehovic, Villejuif, France; Ilan Marcus, Geneva, Switzerland, and Sathyavathy Vengadabady, Vitry-sur-Seine, France, assignors to Agence Nationale de Valorisation de la Recherche, Hauts de Seine, France

Filed Dec. 3, 1969, Ser. No. 881,857
Int. Cl. C07d *51/54*
U.S. Cl. 260—211.5 R 4 Claims

The compound iso-adenosine-3',5'-monophosphoric acid is provided which has the formula



A method of preparing the compound is provided which comprises reacting adenosine 3',5'-monophosphoric acid with *p*-nitrophenol in the presence of dicyclohexyl carbodiimide and reacting the product with potassium *tert*-butoxide.

Iso-adenosine-3',5'-monophosphoric acid may also be referred to as "cyclic iso-AMP". Similar to adenosine 3',5'-monophosphoric acid (cyclic AMP), known to act as second intracellular messenger with respect to a large number of hormones, cyclic iso-AMP generates the dispersion of melanophores in the skin of the frog *in vitro* and the dilatation of melanophores in the skin of the lizard *in vitro*, and it increases the liberation of the hormone thyreotrope (TSH) by hypophysis in rats *in vitro*, but has been discovered superior to cyclic AMP in these properties.

3,627,754

PROCESS FOR PREPARING 7-LOWER ALKANOYL BENZODIAZEPINES UTILIZING CERIC SALTS

Robert Ye-Fong Ning, West Caldwell, and Leo Henryk Sternbach, Upper Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed May 13, 1970, Ser. No. 37,021
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.3 D 5 Claims

The present invention relates to processes for the preparation of 7-lower alkanoyl-1,4-benzodiazepin-2-ones utilizing ceric salts. The 7-lower alkanoyl benzodiazepin-2-ones are known to be useful as muscle relaxants, sedatives and anticonvulsants.

3,627,755

(OPTIONALLY 17-ALKYLATED) 2α, 3α-EPOXY-ANDROSTANE-11β,17β-DIOLS, 19-NOR DERIVATIVES CORRESPONDING AND ESTERS THEREOF

Paul D. Klimstra, Northbrook, and Charles S. Markos, Skokie, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Oct. 29, 1968, Ser. No. 771,640
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 10 Claims

11β,17β-Bisoxygenated Δ^2-steroids of the androstane and estrane families are contacted with a suitable epoxidizing agent to afford the corresponding 2α,3α-epoxides, which are useful pharmacological agents as evidenced by their antihormonal properties, e.g. antiestrogenic, antifertility, antidesoxycorticosterone acetate.

3,627,756

N-DIALKYLAMINOALKYL-N-(2β,19-EPOXY-5α-ANDROSTAN-17β-YL)AMINES/FORMAMIDES AND 3α-HALO DERIVATIVES THEREOF

Paul D. Klimstra, Northbrook, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Apr. 23, 1970, Ser. No. 31,370
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55R 9 Claims

2β, 19-Epoxy-17-keto steroids are contacted with a dialkylaminoalkylamine to afford the corresponding 17-ylimines, which are reduced to the 17β-ylamines and the latter amines are converted to the corresponding formamides by reaction with a formylating agent. These novel compounds exhibit valuable pharmacological properties, e.g. antiulcerogenic, antimicrobial and anti-inflammatory.

3,627,757

6-ALKANOYLTHIO-4-EN-3-OXO STEROIDS AND PROCESS FOR PRODUCTION THEREOF

Taichiro Komeno, Osaka-shi, Japan, assignor to Shionogi & Co., Ltd., Osaka, Japan

Continuation-in-part of application Ser. No. 610,825, Jan. 23, 1967, now abandoned, which is a division of application Ser. No. 335,662, Jan. 3, 1964, now Patent No. 3,300,485, which is a continuation-in-part of application Ser. No. 269,899, Apr. 2, 1963, now abandoned. This application Dec. 24, 1968, Ser. No. 786,728
Int. Cl. C07c *173/00*, *169/20*
U.S. Cl. 260—239.55D 15 Claims

Hormonal 6ε-lower alkanoylthio-3-oxo-4-en-steroids are prepared from corresponding 6ε-halo-3-oxo-delta-4-steroids and 6ε-lower alkanoylthio-5-hydroxy-3-oxo-steroids. They are also useful as intermediates for synthesis of hormonal thieno-[4',3',2'-4,5,6,]steroids which have been disclosed in U.S. Pat. No. 3,300,485.

3,627,758

STYRYL-NAPHTHALENE DERIVATIVES

Kurt Weber, Basel; Peter Liechti, Binningen; Hans Rudolf Meyer, and Adolf Emil Siegrist, both of Basel, all of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Filed Jan. 13, 1969, Ser. No. 790,864
Claims priority, application Switzerland, Jan. 15, 1968, 544/68
Int. Cl. C09b *23/14*
U.S. Cl. 260—240 CA 10 Claims

The invention relates to new styryl-naphthalene derivatives which are useful as optical brighteners.

These new compounds are bis-styryl-naphthalenes containing in at least one of their ring systems at least one obligatory substitutent of the group consisting of a possibly functionally modified sulfonic acid group, a sulfone group, a possibly functionally modified carboxylic acid group and a nitrile group.

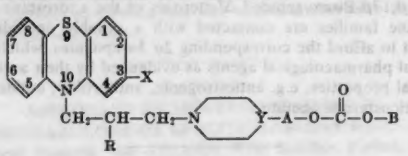
3,627,759

PHENTHIAZINE DERIVATIVES

Jean-Claude Rene Georges Blondel, Savigny-sur-Orge, and Jeans Clement Louis Fouche, Bourg-La-Reine, both of France, assignors to Rhone-Poulenc S. A., Paris, France

Filed Nov. 21, 1968, Ser. No. 777,862
Claims priority, application France, Nov. 24, 1967, 129,636
Int. Cl. C07d 93/14
U.S. Cl. 260—243 8 Claims

Phenthiazine derivatives of the formula:



wherein X represents hydrogen, halogen, or alkyl, alkoxy, alkythio, alkanoyl, dialkysulphamoyl or alkanesulphonyl containing one through four carbon atoms, or cyano or trifluoromethyl, R represents hydrogen or methyl, Y represents a tertiary carbon atom or a nitrogen atom, A represents an alkylene group containing one through four carbon atoms or a radical $-A_1-O-A_2-$ in which A_1 and A_2 represent alkylene group having at least one carbon atom, the total number of carbon atoms in the groups A_1 and A_2 not exceeding four carbon atoms, and B represents alkyl containing at least five carbon atoms, are very active as long-acting neuroleptics, anti-emetics and tranquilizers.

3,627,760

7-(HETEROCYCLYLMERCAPTOACETYLAMINO)-CEPHALOSPORAMIC ACIDS

Hans Bickel, Binningen; Rolf Bosshardt, Arlesheim; Bruno Fechtig, Reinach; Enrico Menard, Basel; Johannes Mueller, Arlesheim, and Heinrcih Peter, Riehen, all of Switzerland, assignors to Ciba Corporation, Summit, N.J.

Filed Dec. 16, 1968, Ser. No. 784,213
Claims priority, application Switzerland, Sept. 13, 1968, 13750/68
Int. Cl. C07d 99/24
U.S. Cl. 260—243 9 Claims

7-(Heterocyclyl-mercaptoacetylamino)-cephalosporanic acids.

Use: antibiotics.

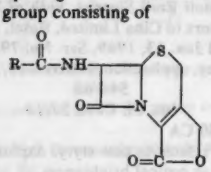
3,627,761

PROCESS FOR THE PREPARATION OF CEPHALOSPORIN

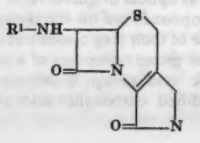
Saul Lewis Neidleman, Lawrence Township; Jerold Alan Last, Princeton; Samuel Cheng Pan, Metuchen, and Joseph Edward Dolfini, N. Brunswick, all of N.J., assignors to E.R. Squibb & Sons, Inc., New York, N.Y.

Filed Jan. 17, 1969, Ser. No. 792,164
Int. Cl. C07d 99/24
U.S. Cl. 260—243 11 Claims

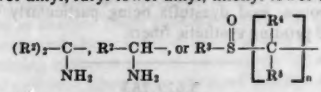
A process comprising the treatment of a compound selected from the group consisting of



and



where R represents alkyl having up to seven carbon atoms, phenyl, X-substituted phenyl, naphthyl, X-substituted naphthyl, pyridyl, pyrryl, furyl, thienyl, pyridyl-lower alkyl, pyrryl-lower alkyl, furyl-lower alkyl, thienyl-lower alkyl,



wherein R^2 represents alkyl having up to seven carbon atoms, phenyl, X-substituted phenyl, naphthyl, cyclohexadienyl (e.g., 1,4-cyclohexadienyl, 1,3-cyclohexadienyl, and 2,4-cyclohexadienyl), X-substituted naphthyl, pyridyl, pyrryl, furyl, thienyl, pyridyl-lower alkyl, pyrryl-lower alkyl, furyl-lower alkyl, or thienyl-lower alkyl; R^3 represents lower alkyl, monocyclic aryl, or monocyclic aryl-lower alkyl; R^4 and R^5 each represent hydrogen, lower alkyl, monocyclic aryl, or monocyclic aryl-lower alkyl; n is 1, 2, or 3; and X represents lower alkyl, lower alkoxy, or halo; and R^1 represents triphenylmethyl, diphenylmethyl, or benzyl, said treatment comprising heating the above compounds to a temperature of about 25° C. to about 100° C. at a pH of about 6 to 11.5. Products prepared by means of the above reaction possess antibacterial activity against a large number of micro-organisms and are intermediates for the synthesis of related compounds (such as cephalothin, cephalexin, cephaloridine) which possess utility known to the art.

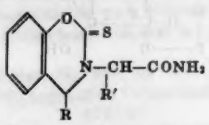
3,627,762

1,3-BENZOXAZINE-2-THIONES

Luigi Bernardi; Severina Coda; Giselbert Karl Suchowsky, and Lorenzo Pegrassi, all of Milan, Italy, assignors to Societa Farmaceutici Italia, Milan, Italy

Filed Apr. 30, 1968, Ser. No. 725,513
Claims priority, application Italy, July 25, 1967, 18753 A/67
Int. Cl. C07d 87/14
U.S. Cl. 260—244 R 4 Claims

Described are 1,3-benzoxazine-2-thiones of the formula



wherein R and R′ are selected from the group consisting of hydrogen, methyl and ethyl. The following compounds come within the above formula: 3,4-dihydro-2-thioxo-2H-1,3-benzoxazine-3-acetamide; 3,4-dihydro-α-methyl-2-thioxo-2H-1,3-benzoxazine-3-acetamide; 3,4-dihydro-4-methyl-2-thioxo-2H-1,3-benzoxazines-3-acetamide. Also described is a process for preparing the compounds which display antidepressant properties.

3,627,763

SUBSTITUTED 2-BENZYL-BENZOFURAN DERIVATIVES

Knut A. Jaeggi, Basel, and Ulrich Renner, Riehen, nr. Basel, both of Switzerland

Filed Sept. 2, 1969, Ser. No. 854,744
Int. Cl. C07d 5/40
U.S. Cl. 260—247.7 G 17 Claims

The compounds are of the class of substituted 2-[2-(p-alkoxybenzyl)-3-benzofuranyl]-ethylamines and pharmaceutically acceptable acid addition salts thereof and have analgesic, antitussive and spasmolytic properties; useful intermediates in the syntheses thereof are the correspondingly substituted 2-(p-alkoxybenzyl)-3-hydroxy-2,3-dihydro-3-benzofuranacetic acid alkyl esters, 2-(p-alkoxybenzyl)-3-benzofuranacetic acid alkyl esters and 2-(p-alkoxybenzyl)-3-benzofuran ethanols; also provided are pharmaceutical compositions comprising said benzofuranyl-ethylamines or pharmaceutical acceptable acid addition salts thereof and a pharmaceutical carrier as well as methods of producing analgesic and spasmolytic effects in a mammal comprising administering them.

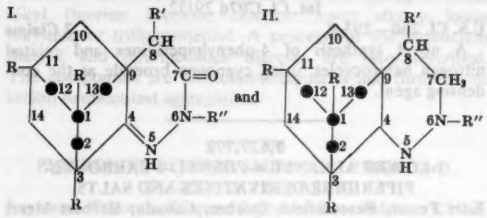
3,627,764

ADAMANTANOPYRIDAZINE COMPOUNDS

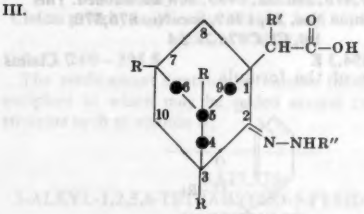
Stephen Slomo Szinai, Wokingham, and Jiban Kumar Chakrabarti, Frimley, both of England, assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed May 1, 1969, Ser. No. 821,078
Claims priority, application Great Britain, May 21, 1968, 24,165/68
Int. Cl. C07d *51/04*
U.S. Cl. 260—250 12 Claims

Adamantanopyridazine compounds of the formulas



and intermediates useful in the synthesis of these compounds, the intermediates being of the formula:



The adamantanopyridazine compounds (formulas I and II) are useful as anti-inflammatory agents and as CNS depressants.

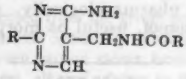
3,627,765

METHOD FOR THE PRODUCTION OF 2-SUBSTITUTED-4-AMINO-5-ACYLAMIDOMETHYLPYRIMIDINE

Masaaki Tsurushima, Kyoto, Japan, assignor to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan

Filed Sept. 19, 1969, Ser. No. 859,554
Claims priority, application Japan, Sept. 20, 1968, 43/68052
Int. Cl. C07d *51/46*
U.S. Cl. 260—256.4 N 7 Claims

Compounds of the formula



wherein R is lower alkyl or phenyl, such compounds being useful as intermediates in the preparation of vitamin B_1 or other pyrimidine derivatives, are synthesized by reacting 1,3-dihalogeno-2-cyanopropene with an amidine of the formula

wherein R has the same meaning as above, and subjecting the resultant product to hydrolysis.

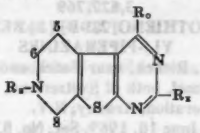
3,627,766

5,6,7,8-TETRAHYDRO-PYRIDO[4',3':4,5]THIENO[2,3-D]PYRIMIDINES

Kurt Eichenberger; Paul Schmidt, both of Therwil, and Ernst Schweizer, Basel, all of Switzerland, assignors to Ciba Corporation, Summit, N.J.

Filed July 25, 1969, Ser. No. 845,054
Claims priority, application Switzerland, Aug. 2, 1968, 11640/68 June 20, 1969, 9468/69
Int. Cl. C07d *99/06*
U.S. Cl. 260—256.5 R 14 Claims

Compounds of the formula



in which R_o stands for an aminoalkylamino group, R_x and R_z for an optionally substituted hydrocarbon radical or hydrogen and which may be substituted in positions 5, 6 and/or 8 are useful as chemotherapeutic and prophylactic agents against malaria.

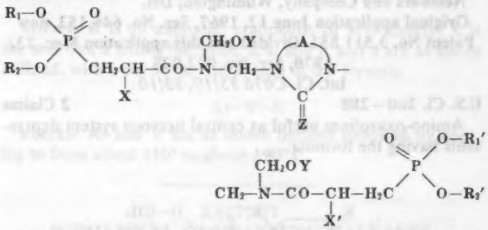
3,627,767

CERTAIN ALKYLENE UREA- OR THIOUREA-CONTAINING PHOSPHORUS COMPOUNDS

Hermann Nachbur, Dornach, and Arthur Maeder, Therwil, both of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Filed Dec. 30, 1969, Ser. No. 889,310
Claims priority, application Switzerland, Jan. 7, 1969, 123
Int. Cl. C07d *49/30*, *51/18*
U.S. Cl. 260—256.5 R 10 Claims

Phosphorus compounds are provided which correspond to the formula



wherein each R is an alkyl, alkenyl or halogenalkyl radical, X and X' each is a methyl radical or a hydrogen atom, Y and Y' each is an alkyl radical or a hydrogen atom, A is an alkylene radical which is optionally substituted and Z is an oxygen or sulfur atom. The phosphorus compounds are manufactured from the corresponding phosphorus carboxylic acid amides; an alkylene urea or thiourea and formaldehyde. These compounds optionally together with a curable aminoplast precondensate are useful for flameproofing and crease-proofing or cellulose-containing fibrous materials.

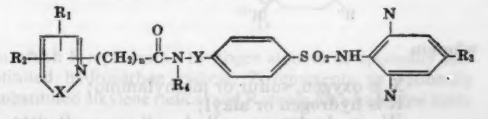
3,627,768

ISOXAZOLECARBONAMIDOBENZENE-SULFONAMIDES

Harald Horstmann; Hans Plumpe; Walter Puls, all of Wuppertal-Elberfeld; Eberhard Schroder; Klaus Gutsche, and Olaf Loge, all of Berlin, all of Germany, assignors to Schering A.G., Berlin and Bergkamen, Germany

Filed June 24, 1969, Ser. No. 853,576
Int. Cl. C07d *51/44*
U.S. Cl. 260—256.5 R 10 Claims

Sulfonamides of the formula



wherein R_1 and R_2 are identical or different, and are hydrogen or alkyl, alkoxy, or alkimercapto having one to four carbon atoms; R_3 is alkyl or alkoxy which may also form a closed ring which may contain additional oxygen atoms and should contain one to eight carbon atoms; R_4 is hydrogen or alkyl having one to four carbon atoms; X is oxygen, nitrogen, or sulfur; Y is alkylene having one to four carbon atoms; and *n* is an integer between zero and four; as well as the salts of such sulfonamides with physiologically tolerated bases, are provided as new blood sugar lowering compounds.

3,627,769

1-(4,5-DIHYDROTHIENO[2,3-B] [1] BENZOTHIEPIN-4-YL)-PIPERAZINES

Walter Schindler, Riehen, near Basel, and Armin Zust, Birsfelden, near Basel, both of Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

Filed June 10, 1969, Ser. No. 832,022
Claims priority, application Switzerland, June 20, 1968, 9210/68
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 TR **2 Claims**

1-(4,5-Dihydrothieno[2,3-b] [1] benzothiepin-4-yl)-piperazine and the pharmaceutically acceptable acid addition salts thereof, exhibit central nervous system depressant effects, pharmaceutical compositions comprising said compound or a pharmaceutically acceptable acid addition salt thereof and a method for producing central nervous system depressant effects in a mammal comprising administering an effective amount of said compound or a pharmaceutically acceptable acid addition salt thereof.

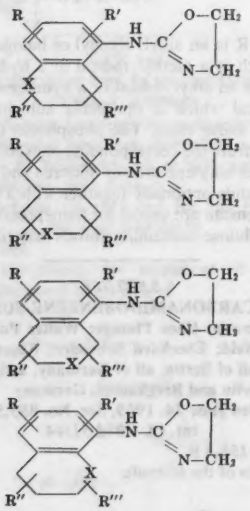
3,627,770

HETEROCYCLIC AMINO-OXAZOLINES

George Levitt, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Original application June 12, 1967, Ser. No. 646,153, now Patent No. 3,511,851. Divided and this application Mar. 23, 1970, Ser. No. 022,028
Int. Cl. C07d *35/10, 33/10*
U.S. Cl. 260—288 **2 Claims**

Amino-oxazolines useful as central nervous system depressants having the formula:



wherein

X is oxygen, sulfur or methylamino;
R is hydrogen or alkyl;
R′ is hydrogen, alkyl, alkoxy, alkylthio, dimethylamino, fluorine, chlorine or bromine;
R″ is hydrogen or alkyl;
R‴ is hydrogen or alkyl.

Typical is 2-(8-thiochromanylamino)-2-oxazoline useful as a central nervous system depressant.

3,627,771

RING CLOSURE WITH CYANOGEN BROMIDE

Russell Kwok, Concord, Calif., and Paul Pranc, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 21, 1969, Ser. No. 818,091
Int. Cl. C07d *29/32*
U.S. Cl. 260—293 E **2 Claims**

A novel synthesis of 4-phenylpiperidines and related nitrogen heterocycles, using cyanogen bromide as the condensing agent.

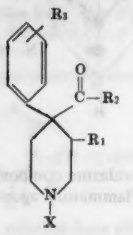
3,627,772

1-LOWER ALKENYL-4-PHENYL-4-CARBONYL-PIPERIDINE DERIVATIVES AND SALTS

Kurt Freter, Beaconsfield, Quebec, Canada; Herbert Merz; Hans-Detlef Schroeder, and Karl Zeile, all of Ingelheim, Rhine, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhine, Germany

Continuation-in-part of application Ser. No. 859,519, July 28, 1969, now abandoned , which is a continuation of application Ser. No. 427,478, Jan. 22, 1965, now abandoned. This application Nov. 13, 1969, Ser. No. 876,570
Int. Cl. C07d *29/24*
U.S. Cl. 260—294.3 E **7 Claims**

Compounds of the formula



wherein

R_1 is hydrogen, α-methyl or β-methyl,
R_2 is methyl, ethyl, n-propyl, methoxy, ethoxy or n-propoxy,
R_3 is methyl, hydroxyl, methoxy, acetoxy, fluorine, chlorine or bromine, and

X is $—CH_2—CH=CHBr$, $—CH_2—CH=CHCl$, $—CH_2—CCl=CH_2$, $—CH_2—CBr=CH_2$, $—CH_2—CH=CCl_2$, $—CH_2—CH=CBr_2$, $—CH_2—CH=C(CH_3)_2$, $—CH_2—C(CH_3)=CH_2$, $—CH(CH_2)—CH=CH_2$ or $—CH_2—CH=CH(CH_3)$,

provided, however, that when X is $—CH_2—CH=CHCl$, R_2 is other than ethyl and R_3 is other than 3-hydroxyl, and non-toxic, pharmacologically acceptable acid addition stalts thereof, useful as morphine-antgonistic analgesics.

3,627,773

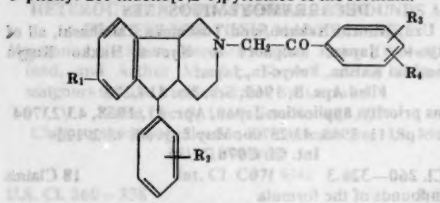
1,3,4,4A,5,9B-HEXAHYDRO-5-PHENYL-2H-INDENO[1,2-C]-PYRIDINES

Anton Ebnother, 2 Barenbrunnenweg, 4144 Arlesheim; Jean-Michel Bastian, 5 Rheinparkstrasse, 4127 Birsfelden, and Fulvio Gadient, 45 Baselerstrasse, 4127 Birsfelden, all of Switzerland assignor Sandoz Ltd. Basle, Switzerland

Filed Apr. 30, 1970, Ser. No. 33,499
Claims priority, application Switzerland, May 6, 1969, June 9, 1969, 8747/69, Dec. 11, 1969, 18423/69, Feb. 5, 1970, 1650/70, 6913/69
Int. Cl. C07d *39/00*
U.S. Cl. 260—293.54 **19 Claims**

The invention concerns new (4aRS,5SR,9bSR)-, (4aRS,5SR,9bRS)- and (4aRS,5RS,9bRS)-1,3,4,4a,5,9b-hexahydro-

5-phenyl-2H-indeno[1,2-c]pyridines of the formula:



wherein R_1 is hydrogen, lower alkyl, fluorine, bromine or chlorine, and each of R_2, R_3 and R_4 are hydrogen, lower alkyl, fluorine, bromine, chlorine, lower alkoxy, lower alkylthio or trifluoromethyl. A process for the production thereof and intermediates therefor are also described. The compounds are serotonin-antagonists and furthermore inhibit hematoblast aggregation.

3,627,774

PYRIDOXINE PYRIDOXAMINE AND PYRIDOXAL FLUFENAMATE SALTS

Raymond Francois Jacques Sarbach, Rue Philibert Collet, Chatillon-sur-Chalaronne (Ain); Dimitri Yavordios, Route de Thoissey, Chatillon-sur-Chalaronne (Ain); Le Hao Dong, 42 rue Pitol, Montpellier (Herault); Jacques Mizoule, Chatillon-sur-Chalaronne (Ain), and Charles Ricci, 168 bis boulevard de le Croix-Rousse, Lyon (Rhone), all of France

Filed July 24, 1970, Ser. No. 58,147

Claims priority, application France, July 24, 1969, 6925288

Int. Cl. C07d *31/34*

U.S. Cl. 260—295 S **1 Claim**

The medicament contains pyridoxine flufenamate and an excipient to which may be added several compatible constituents such as vitamin B_1.

3,627,775

1-ALKYL-1,2,5,6-TETRAHYDRO-3-PYRIDYLMETHYL CARBOXYLIC

Hans-Hugo Hubner; Gerhard Walther; Karl Zeile; Helmut Wick, and Klaus Stockhaus, all of Ingelheim, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim, Germany

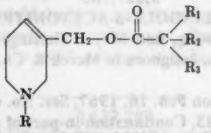
Filed June 25, 1969, Ser. No. 836,658

Claims priority, application Austria, June 25, 1968, A6098/68

Int. Cl. C07d *31/36*

U.S. Cl. 260—295.5 R **8 Claims**

1-alkyl-1,2,5,6-tetrahydro-3-pyridylmethyl carboxylic acid esters of the formula



wherein R is selected from the group consisting of alkyl of two to 10 carbon atoms optionally substituted with cyano or alkoxy of one to seven carbon atoms, branched alkyl of three to five carbon atoms, alkenyl of two to three carbon atoms optionally substituted with a halogen, alkynyl of two to three carbon atoms, cycloalkyl of three to six carbon atoms and phenyl alkyl of one to seven alkyl carbon atoms, R_1 is selected from the group consisting of hydrogen, methyl, —OH and Cl—, R_2 is selected from the group consisting of hydrogen, phenyl, cycloalkyl of five to six carbon rings and R_1 and R_2 together with the carbon to which they are attached form a five to six member cycloaliphatic ring, R_3 is phenyl and when R_2 and R_3 are each phenyl they may optionally be linked together in the orthopositions by a direct bond or through an oxygen atom and their nontoxic, pharmaceutically acceptable acid addition salts and quaternary ammonium salts which compounds possess spasmolytic and central sedative properties without undesirable side effects usually associated with spasmolytics.

3,627,776

CERTAIN PHENOXY- AND PHENYLTHIO-1,2-BENZISOTHIAZOLES AND THEIR PRODUCTION

Horst Bosmagen, Haan, and Manfred Plempel, Wuppertal-Elberfeld, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

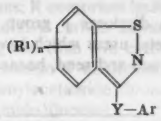
Filed Mar. 17, 1969, Ser. No. 807,970

Claims priority, application Germany, Apr. 3, 1968, P 17 70 122.3

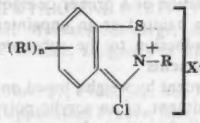
Int. Cl. C07d *91/12*

U.S. Cl. 260—304 **12 Claims**

1,2-benzisothiazole derivatives of formula



wherein Ar is phenyl, naphthyl, or phenyl or naphthyl substituted by one or more similar or different members selected from the group consisting of halogen, alkyl, alkoxy, alkylmercapto and nitro, Y is oxygen or sulfur R^1 is hydrogen, halogen, alkyl, alkoxy, alkylmercapto or nitro and if there are two or three R^1 moieties, they are the same or different and *n* is 1, 2 or 3, are useful as antimicotics. The 1,2-benzisothiazole derivatives are produced by mixing a 3-chloro chloride of formula



wherein R is an aliphatic, araliphatic or aryl moiety, X is the anion of a strong inorganic acid and R and *n* are as above defined, with a phenol or thiophenol of the formula

Ar—Y—H

wherein Ar and Y are as above defined followed by heating to from about 150° to about 190° C.

3,627,777

N-THIAZOLYL-OXODIAZACYCLOALKANES

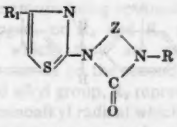
Paul Schmidt, Therwil; Max Wilhelm, Allschwil, and Kurt Eichenberger, Therwil, all of Switzerland, assignors to CIBA Corporation, Summit, N.J.

Continuation-in-part of application Ser. No. 594,403, Nov. 15, 1966, now Patent No. 3,503,989, which is a continuation-in-part of application Ser. No. 564,536, July 12, 1966, now Patent No. 3,298,914, which is a continuation-in-part of application Ser. No. 485,927, Sept. 8, 1965, now Patent No. 3,299,069, which is a continuation-in-part of application Ser. No. 447,868, Apr. 13, 1965, now abandoned , which is a continuation-in-part of application Ser. No. 391,294, Aug. 21, 1964, now abandoned , which is a continuation-in-part of application Ser. No. 282,589, May 23, 1963, now abandoned. This application Nov. 3, 1969, Ser. No. 873,666

Int. Cl. C07d *91/34*

U.S. Cl. 260—306.8 R **7 Claims**

Compounds of the formula



in which R represents a hydrogen atom or an optionally substituted hydrocarbon radical, Z represents an optionally substituted alkylene radical and R stands for a hydrogen atom,

an acyl radical, an optionally substituted hydrocarbon radical or aliphatic character, are valuable intermediates for the preparation of the corresponding 5-nitrothiazolyl compounds which are valuable antiparasitic and antibacterial agents.

3,627,778

N- AND N'-SUBSTITUTED N-BROMOACETYL UREAS

Ludwig Nusslein, and Ernst Albrecht Pieroh, both of Berlin, Germany, assignors to Schering AG, Berlin and Bergkamen, Germany

Filed July 18, 1968, Ser. No. 746,710
Claims priority, application Germany, Sept. 19, 1967, P 16 43 039.0
Int. Cl. C07d *49/34*
U.S. Cl. 260—309.7 **30 Claims**

The specification discloses a group of N- and N'-substituted N-bromoacetyl ureas which have been found useful in the treatment of soil and seed, because they have a broad biocidal activity.

3,627,779

SEALER OR PRIMER COMPOSITION OF AN ACRYLIC POLYMER HAVING ADHESION PROMOTING GROUPS AND AN EPOXY RESIN

Richard A. Sandstedt, Flint, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 12, 1968, Ser. No. 783,399
Int. Cl. C08f *45/38*
U.S. Cl. 260—31.8 M **3 Claims**

A sealer composition or a primer composition that is used for the repair of a painted or an unpainted metal substrate having excellent adhesion to the substrate that has as the film-forming constituents

1. at least 50 percent by weight, based on the weight of the film-forming constituent, of an acrylic polymer of an acrylic ester that is an alkyl methacrylate or an alkyl acrylate in which the acrylic polymer has adhesion promoting groups attached to the polymer backbone;

2. at least 5 percent by weight of an epoxy resin; and

3. 0–40 percent by weight of an organic plasticizer.

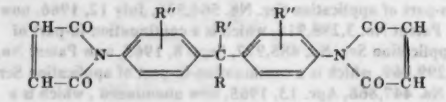
3,627,780

BIS-MALEAMIC COMPOUNDS

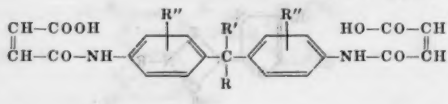
Lucien Bonnard, and Pierre Grosjean, both of Lyon, France, assignors to Societe Rhodiaceta, Paris, France

Filed Feb. 21, 1968, Ser. No. 707,283
Claims priority, application France, Feb. 28, 1967, 96,872
Int. Cl. C07d *27/18*
U.S. Cl. 260—326.3 **7 Claims**

New bis-imides of formula:



in which R is hydrogen, alkyl, cycloalkyl or aryl, R′ is alkyl, cycloalkyl or aryl, or R and R′ together form an aalkylene group and R″ is hydrogen or lower alkyl, and made by dehydrating new acids of formula:



in which R, R′ and R″ are as above.

The bis-imides can be formed into moulded cross-linked polymers by heating.

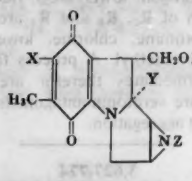
3,627,781

DECARBAMOYLMITOSANES

Keizo Uzu; Kinichi Nakano, and Toshinaka Takahashi, all of Tokyo-to, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Apr. 8, 1969, Ser. No. 814,278
Claims priority, application Japan, Apr. 11, 1968, 43/23704 Apr. 11, 1968, 43/23706, May 2, 1968, 43/29122
Int. Cl. C07d *27/36*
U.S. Cl. 260—326.3 **18 Claims**

Compounds of the formula



and processes for their preparation are provided wherein X is methoxy or amino, Y is methoxy, hydroxy or hydrogen when R_1 is hydrogen and methoxy or hydroxy when R_1 is R_2CO, Z is hydrogen or methyl when R_1 is hydrogen and methyl or R_2 CO when R_1 is R_2CO, R_1 is hydrogen or R_3CO and R_2 is lower alkyl. These compounds are antibiotics.

3,627,782

SYNTHESIS OF GRAMINE SALT OF NITROACETATE ESTERS

Theodore Largman, Morristown, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed June 12, 1969, Ser. No. 832,832
Int. Cl. C07d *27/56*
U.S. Cl. 260—326.15 **2 Claims**

Tryptophan, an essential amino acid, is prepared from gramine and an ester of nitroacetic acid by combining gramine and the ester in an inert solvent maintained at about room temperature to form the corresponding salt, and then heating the salt in solution to convert it to the corresponding ester of α-nitro-β- (3-indole) propionic acid, which is reduced and hydrolyzed in accordance with conventional methods to afford tryptophan. The salt is a novel compound.

3,627,783

1-AROYLINDOLE-3-ACETONITRILES

George Gal, Watchung, and Meyer Sletzinger, North Plainfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Original application Feb. 16, 1967, Ser. No. 616,496, now Patent No. 3,470,203, Continuation-in-part of application Ser. No. 255,642, Feb. 1, 1964, now abandoned , Continuation-in-part of application Ser. No. 496,701, Oct. 15, 1965, now abandoned. Divided and this application Sept. 5, 1969, Ser. No. 870,814
Int. Cl. C07d *27/56*
U.S. Cl. 260—326.16 **3 Claims**

1-Aroylindole-3-acetic acids are prepared via 1-aroylindole-3-acetaldehydes and their acetals, or 1-aroylindole-3-ethanols and their ethers and esters, or 1-aroylindoxyls, or 1-aroylindole-3-acetonitriles. The Fischer indole synthesis gives the acetals, ethers, esters or nitriles which are then aroylated in the 1-position. Hydrolysis to aldehydes and alcohols permits oxidation to the acids. The nitriles are hydrolyzed enzymatically to the acids. The 1-aroylindoxyls, formed by ring closure of N-aroyl-N-o-carboxyphenyl alanines, are converted to the 1-aroylindole-3-acetic acids via the malonic acid, Reformatsky, Grignard, or Wittig syntheses.

3,627,784

HETEROCYCLIC PHOSPHORUS COMPOUNDS AND PROCESS FOR THEIR MANUFACTURE

Hermann, Nachbur, Dornach; Joerg Kern, Oberwil/Baselland, and Arthur Maeder, Therwil, all of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Filed Dec. 9, 1969, Ser. No. 883,627
Claims priority, application Switzerland, Dec. 18, 1968, 18918/68
Int. Cl. C07f 9/40
U.S. Cl. 260—338 8 Claims

Heterocyclic phosphorus compounds with a hetero-ring containing eight ring members, namely two carbon, two nitrogen and two oxygen atoms are provided. These compounds are manufactured by reacting 2 mols of at least one phosphonocarboxylic acid amide with at least 4 mols of anhydrous formaldehyde in the presence of an acid catalyst and in the absence of water. The phosphorous compounds are used for flameproofing and creaseproofing cellulose-containing textile material. They may be optionally used together with an aminoplast precondensate.

3,627,785

BENZOFURAN-2-CARBOXYLIC ACIDS

Janos Zergenyi, Riehen, and Ernst Habicht, Oberwil, both of Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

Filed July 7, 1969, Ser. No. 839,631
Claims priority, application Switzerland, July 22, 1968, 10967/68
Int. Cl. C07d 5/42
U.S. Cl. 260—346.2 4 Claims

Compounds of the class of 4-(2-methylene-alkoyl-2-carboxylic acids and the pharmaceutically acceptable salts thereof with bases have diuretic and saluretic effects in mammals; pharmaceutical compositions comprising said compounds and a pharmaceutical carrier, and methods of producing a diuretic and saluretic effect in mammals are provided; a typical embodiment is 6-methyl-4-(2-methylene-butyryl)-benzofuran-2-carboxylic acid.

3,627,786

CONTINUOUS PRODUCTION OF PARALDEHYDE

Georges Gobron, and Marcel Repper, both of Melle, Deux-Sevres, France

Filed July 2, 1969, Ser. No. 838,548
Claims priority, application France, Aug. 2, 1968, 491
Int. Cl. C07d 19/00
U.S. Cl. 260—340 10 Claims

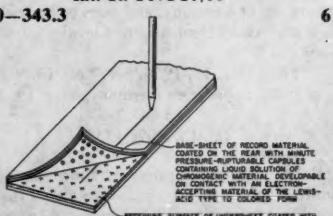
This invention relates to a method of producing paraldehyde from acetaldehyde by passing a liquid feed stream of acetaldehyde through a reaction zone, the feed stream serving to maintain the solid catalyst in a highly dispersed and fluidized state.

3,627,787

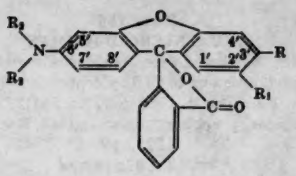
AMIDS- AND SULFONAMIDO-SUBSTITUTED FLUORANS

Chao-Han Lin, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Jan. 21, 1969, Ser. No. 792,435
Int. Cl. C07d 21/00
U.S. Cl. 260—343.3 6 Claims


BASE-SHEET OF RECORD MATERIAL COATED ON THE REAR WITH MINUTE PRESSURE-RUPTURABLE CAPSULES CONTAINING LIQUID SOLUTION OF CHROMOGENIC MATERIAL DEVELOPABLE ON CONTACT WITH AN ELECTRON-ACCEPTING MATERIAL OF THE LEWIS-ACID TYPE TO COLORED FORM
RECEIVING SURFACE OF UNDERSHEET COATED WITH AN ELECTRON-ACCEPTING MATERIAL OF THE LEWIS-ACID TYPE

A chromogenic material of normally colorless form is disclosed, having a structural formula:



wherein R_1 represents a radical having the structural formula —NH—CO—Y or a radical having the structural formula —NH—SO_2—Y wherein Y comprises phenyl, methoxyphenyl, naphthyl, quinolyl, benzyl, alkyl radicals having less than five carbon atoms, and amino-, nitro-, and alkyl-substituted phenyl radicals wherein the alkyl groups have less than five carbon atoms; R comprises hydrogen and alkyl radicals having less than five carbon atoms; and R_2 comprises alkyl radicals having less than five carbon atoms. Examples include 2'-acetamido-6'-diethylaminofluoran; 6'-diethylamino-2'-(phenylacetamido)fluoran; 6'-diethylamino-2'-(p-toluenesulfonamido)fluoran; 2'-acetamido-6'-diethylamido-3'-methylfluoran; 6'-diethylamino-3'-methyl-2'-(p-toluenesulfonamido)fluoran; 6'-diethylamino-2'-(p-nitrobenzenesulfonamido)fluoran; 6'-diethylamino-3'-methyl-2'-(p-nitrobenzenesulfonamido)fluoran; 6'-diethylamino-2'-(2-naphthalenesulfonamido)fluoran; 6'-diethylamido-2'-(8-quinolinesulfonamido)fluoran; and 6'-diethylamino-2'-(4-methoxybenzenesulfonamido)fluoran.

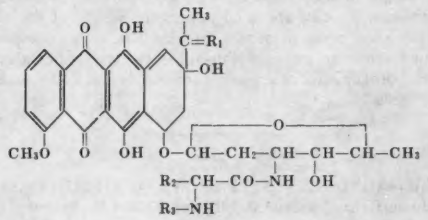
3,627,788

NAPHTHACENE DERIVATIVES

Jean Bouchaudon, Morsang-Sur-Orge, and Georges Jolles, Sceaux, both of France, assignors to Rhone-Poulenc S. A., Paris, France

Filed Nov. 27, 1968, Ser. No. 779,632
Claims priority, application France, Nov. 28, 1967, 130018
Int. Cl. C07d 7/04, 7/18
U.S. Cl. 260—345.7 7 Claims

Naphthacene derivatives of the formula:



wherein R_1 represents an oxygen atom or a group of the formula

in which R_4 represents hydrogen or an alkyl, alkanoyl, thioalkanoyl, aryl, aroyl, carbamoyl, thiocarbamoyl or amidino group, these groups being optionally substituted, and R_5 represents hydrogen, or R_4 and R_5 together with the nitrogen atom to which they are attached represent piperazin-1-yl which carries on the second nitrogen atom an optionally substituted alkyl group, R_2 represents hydrogen, or an alkyl group, an aminoalkyl radical which is optionally substituted on the amino group, or an aryl, aralkyl, heterocyclyl or heterocyclylalkyl group and R_3 represents hydrogen, or R_2 and R_3 together represent an alkylene group containing three to six carbon atoms, and salts thereof, possess antitumor properties.

3,627,789

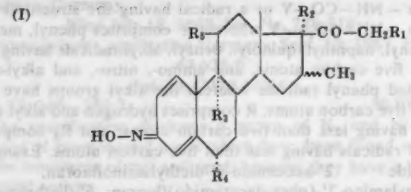
3-OXO-STEROID-OXIMES

Georg Anner, Basel, and Peter Wieland, Oberwil/BL, both of Switzerland, assignors to CIBA Corporation, Summit, N.J.

Filed Dec. 4, 1968, Ser. No. 781,273
Claims priority, application Switzerland, Dec. 8, 1967, 17253/67
Int. Cl. C07c *169/34*
U.S. Cl. 260—397.45 7 Claims

3-Oxosteroid-oximes of the formula

(I)



in which R_1 represents a free, esterified or etherified hydroxyl group, R_2 a free or esterified hydroxyl group, R_3 and R_4 a hydrogen or fluorine atom each and R_5 represents a hydroxyl or oxo group, and at least one of the substituents R_3 or R_4 must be fluorine and the 16-methyl group may be α- or β-positioned, are compounds showing a good anti-inflammatory activity. They are prepared by oximation of corresponding 3-oxo compounds.

3,627,790

ACTIVATED NICKEL CATALYSTS

Alvin B. Stiles, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 30, 1969, Ser. No. 846,236
Int. Cl. C07c *49/68*
U.S. Cl. 260—369 12 Claims

Nickel-containing foraminous material is formed by leaching about 2–100 percent by weight of the aluminum from an alloy consisting essentially of about 25–47 percent by weight of nickel and about 53–75 percent by weight of aluminum, at least about 65 percent by weight of the nickel in the alloy being present as intermetallic $NiAl_3$ compound. This foraminous material is useful as an activated catalyst for the hydrogenation of organic compounds and as an anode in fuel cells.

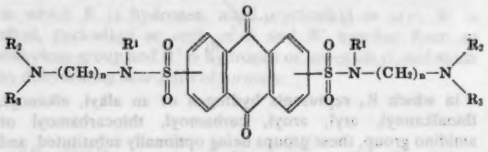
3,627,791

BIS(AMINOALKYLSULFAMOYL) ANTHRAQUINONES

Johann Grisar; Arthur D. Sill, and Robert W. Fleming, all of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.

Filed Nov. 21, 1968, Ser. No. 777,885
Int. Cl. C07c *143/78*
U.S. Cl. 260—371 7 Claims

A compound selected from a base of the formula



Formula I

wherein:

(A) each R^1 is hydrogen or methyl;
(B) each n is an integer of 2 to 4;
(C) each of R^2 and R^3 is alkyl of 3 to 5 carbon atoms or alkenyl of 3 to 5 carbon atoms; or a pharmaceutically acceptable acid addition salt of said base.

These compounds are useful as antiviral agents.

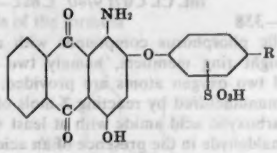
3,627,792

PINK DYE FOR NYLON

Robert W. Eltonhead, Reading, Pa., assignor to Crompton & Knowles Corporation, Worcester, Mass.

Filed May 3, 1965, Ser. No. 452,868
Int. Cl. C09b *1/54*
U.S. Cl. 260—373 6 Claims

A compound of the formula



wherein R is H or an alkyl group of 4 to 9 carbon atoms, and the water-soluble sulfonic acid salts thereof.

3,627,793

ANTHRAQUINONE DYES

Karl Maier, Ludwigshafen am Rhine, Germany, assignor to Badische Anilin-& Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Filed Apr. 10, 1968, Ser. No. 720,353
Claims priority, application Germany, Apr. 14, 1967, P 16 44 468.1
Int. Cl. C09b *1/50*
U.S. Cl. 260—376 2 Claims

1-amino-4-hydroxyanthraquinones containing in the 2-position a carboxyl group esterified by diols having four to 10 carbon atoms.

3,627,794

SULFUR-CONTAINING COMPOUNDS

Robert A. Grimm, Savage, and Robert C. Slagel, both of Burnsville, Mich., assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation of application Ser. No. 544,401, Apr. 22, 1966, now abandoned, which is a continuation-in-part of application Ser. No. 458,477, May 24, 1965, now abandoned. This application Feb. 16, 1970, Ser. No. 10,095
Int. Cl. C07f *7/22*
U.S. Cl. 260—402.5 17 Claims

A class of bis organo sulfide and disulfide derivatives are provided by the reaction of an ethylenically unsaturated compound with either sulfur monochloride or sulfur dichloride to form the corresponding dichloride diadduct of which the chloro substituents are converted to a variety of other functional groups.

3,627,795

CONTINUOUS PRODUCTION OF VITAMIN A PALMITATE

Horst Pommer, Ludwigshafen; Axel Nuerrenbach, Gruenstadt; Georg Klotmann, Ludwigshafen, and Hans Grassner, Heidelberg, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Filed Mar. 16, 1970, Ser. No. 19,753
Claims priority, application Germany, Mar. 19, 1969, P 19 13 847.7
Int. Cl. C07c *175/00*
U.S. Cl. 260—410 12 Claims

Vitamin A palmitate is prepared from vitamin A alcohol and palmitoyl chloride in the presence of a tertiary amine in a continuous process in which vitamin A palmitate is obtained in high purity and almost quantitative yields.

3,627,796

CONTINUOUS PROCESS FOR PRODUCING FAT AND SOLIDS FROM WET BIOLOGICAL SUBSTANCE

Ezra Levin, Champaign, Ill., assignor to Viobin Corporation, Champaign, Ill.

Original application Nov. 2, 1964, Ser. No. 408,231, now Patent No. 3,538,973, dated Nov. 10, 1970. Divided and this application Apr. 9, 1969, Ser. No. 814,634

Int. Cl. C11b *1/10*

U.S. Cl. 260—412.8 9 Claims

A continuous process for producing fat and defatted solids from biological substance having a high-moisture content. Particles of substance and a solvent capable of forming an azeotrope with water and removing fat from the substance are continuously introduced into a wet intake zone and heated together to distill off azeotrope. Fluent mixture with entrained particles is continuously bled from the wet intake zone to a dry outlet zone and further heated to further dry the entrained particles in isolation from the intake zone. Miscella with entrained particles is continuously bled from the outlet zone for filtering of the dried particles from the miscella and separation of the fat from the miscella. Course particles are preferably screened from the fluent mixture bled from the intake zone to the outlet zone. Large portions of the particles subjected to drying and defatting are removed to advantage from the intake zone and outlet zone respectively for further processing.

3,627,797

TITANIUM HALIDE-MERCAPTAN AND PREPARATION THEREOF

Richard R. Durst, Stow, and Heinz Uelzmann, Cuyahoga Falls, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Original application Oct. 7, 1965, Ser. No. 493,868, now abandoned. Divided and this application May 14, 1969, Ser. No. 824,670

Int. Cl. C07f *7/28*

U.S. Cl. 260—429.5 4 Claims

Compositions of aluminum trihydrocarbyls (triisobutyl aluminum) and titanium (III) halide-amine hydrohalide complexes are useful in the polymerization of olefins and cyclic oxides such as ethylene, propylene, butadiene and propylene oxide. The complex has the formula $YH^+(TiX_4)^-$ where Y is an amine having up to 20 carbon atoms and a pK value of not greater than 12, X is halogen and Ti has a valence of three and is prepared by reacting a mercaptan and an amine with a titanium tetrahalide. The resulting complex and disulfide can be separated from each other by virtue of their different solubilities. The process also affords a method of making a disulfide.

3,627,798

PROCESS FOR PREPARING THE NICKEL DERIVATIVES OF METHYLENE BISPHENOL

Laird Gordon Lindsay Ward, Suffern, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Oct. 27, 1969, Ser. No. 869,905

Int. Cl. C07f *15/04*; C08f *45/62*

U.S. Cl. 260—439 R 11 Claims

A process for preparing nickel derivatives of methylene bisphenols in which a methylene bisphenol, a Group I*a* metal alkoxide and a nickel salt are reacted in an essentially nonaqueous environment, and the nickel derivative is precipitated from solution. Novel nickel derivatives of methylene bisphenol, e.g., nickel hexachlorophene, are effective as light stabilizing additives in vinyl polymers.

3,627,799

PROCESS FOR THE PREPARATION OF POLYHALOALKYL CHLOROFORMATES

David E. Young, Denville; Douglas E. Gould, Boonton; Lowell R. Anderson, Parsippany, and William B. Fox, Morris Township, Morris County, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 28, 1968, Ser. No. 771,369

Int. Cl. C07c *69/64*; C01b *31/26*; A01n *9/12*

U.S. Cl. 260—463 11 Claims

Chloroformates of the formula:

$$R-[OC(O)Cl]_n$$

wherein n is 1 or 2; R may be a radical selected from the group consisting of SF_5 and an open chain YZ-perhaloalkyl group when n is 1, R may be an open-chain YZ-perhaloalkylene group containing at least three carbon atoms when n is 2, wherein Y and Z are substituents on the R moiety and are the same or different electronegative groups; may be prepared by reacting hypochlorites of the formula $R-(OCl)_n$ wherein R and n are as defined above, with carbon monoxide. The novel chloroformates are useful as catalysts for the polymerization of unsaturated compounds, as agricultural fumigants and in the preparation of polycarbonates, polyesters and formaldehyde polymers.

3,627,800

ORGANOSILICON COMPOUNDS

William J. Owen, Penarth, and Bryan E. Cooper, Bridgend, both of Wales, assignors to Midland Silicones Limited, Berkshire, England

Filed Apr. 9, 1970, Ser. No. 27,104

Claims priority, application Great Britain, Apr. 11, 1969, 18,780/69

Int. Cl. C07f *7/02*, *7/04*

U.S. Cl. 260—448.2 N 4 Claims

Organosilicon compounds defined by the formula

$$R_3SiCH_2NArNCH_2SiR_3$$
$$\quad\quad R' \quad\quad R'$$

are prepared by reacting R_3SiCH_2X with $HR''NArNR''H$, where R is an alkyl, alkenyl, alkoxy or aryl radical, R′ is H, alkyl or R_3SiCH_2-, X is Cl, Br or I, R″ is H or alkyl and Ar is phenylene or diphenylene. These compounds are useful as oxidation and ozone inhibitors in organic rubbers and polymeric materials and as oxidation detection additives.

3,627,801

FLUOROAROMATIC-CONTAINING ORGANOSILICON COMPOUNDS

Ogden R. Pierce, and John R. Greenwald, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Aug. 27, 1970, Ser. No. 67,617

Int. Cl. C07f *7/08*, *7/18*

U.S. Cl. 260—448.2 D 16 Claims

Compounds of the general formula

$$R_aSiCH_2CH_2C_6F_4CH_2CH_2SiR_a,$$
$$\quad\quad X_{3-a} \quad\quad\quad\quad X_{3-a}$$

for example

$$(CH_3)_2SiCH_2CH_2C_6F_4CH_2CH_2Si(CH_3)_2$$
$$\quad\quad\quad\quad Cl \quad\quad\quad\quad\quad\quad Cl$$

can be hydrolyzed and condensed to produce polymeric fluids, elastomers and resins.

3,627,802

MERCAPTOMETHYL ALKOXY SILANES

Kenneth M. Lee, Bay City, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Aug. 4, 1969, Ser. No. 847,437

Int. Cl. C07f *7/02*, *7/04*

U.S. Cl. 260—448.2 E 2 Claims

Compounds of the formula $HSCH_2(R'_{3-x})\ Si(OR)_x$ are prepared by reacting the corresponding thioacetates having

the group $CH_3(c{=}o)$ SCH_2Si with an alcohol under basic conditions to give mercaptomethylsilanes and the acetate ester of the alcohol. For example, thioacetoxymethyl trimethoxysilane is reacted with methanol in the presence of sodium methoxide to give mercaptomethyl trimethoxysilane and methyl acetate. mercaptomethylsilanes are used to couple siliceous substances, such as clay, to diene polymers.

3,627,803

HIGH TEMPERATURE METHOD OF PREPARING ORGANOSILICON HYDRIDE COMPOUNDS

Keith W. Michael, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Nov. 3, 1969, Ser. No. 873,519

Int. Cl. C07f 7/02, 7/04

U.S. Cl. 260—448.2 E **6 Claims**

Aluminum alkyls are reacted with halo and/or alkoxysilanes at 300° C. or above to give silanes containing SiH groups without alkylation of the silicon. For example, a mixture of triethyl aluminum and dimethyldichlorosilane was heated in a tube at 450° C. for less than one second to give dimethylchlorosilane and dimethylsilane without the formation of ethylsilicon bonds.

3,627,804

ORGANOSILICON COMPOUNDS

Grish Chandra, and William J. Owen, both of Penarth, Wales, assignors to Midland Silicones Limited, Reading, Berkshire, England

Filed Nov. 24, 1969, Ser. No. 879,548

Claims priority, application Great Britain, Dec. 4, 1968, 57,632/68

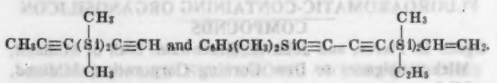
Int. Cl. C07f 7/08

U.S. Cl. 260—448.2 Q **2 Claims**

Organosilicon compounds having acetylenic substituents in the molecule are defined by the formula

$R'(C{\equiv}C)_m(R_2Si)_n(C{\equiv}C)_mR'$,

where R is a monovalent hydrocarbon or halogenohydrocarbon radical, preferably methyl or phenyl, R′ is H, alkyl, alkenyl, phenyl or triorganosilyl and when *n* is 0, at least one R′ is $R(R_2Si)_p$—where *p* is 2, 3 or 4, *m* is 0, 1 or 2, *n* is 0, 2, 3 or 4, and when *n* is 0, *m* is 1. Examples of such compounds are



These compounds are useful as intermediates in preparing polymeric organosilicon compounds and as modifiers for organic polymers as well as for use as ultraviolet absorbents.

3,627,805

PREPARATION OF CYCLIC SILOXANES

David Randall Thomas, and John Francis, both of Glamorgan, England, assignors to Midland Silicanes Limited, Reading, Berkshire, England

Filed Nov. 25, 1969, Ser. No. 879,908

Claims priority, application Great Britain, Dec. 11, 1968, 58,846/68

Int. Cl. C07f 7/02

U.S. Cl. 260—448.2 E **6 Claims**

Hydrolyzable dimethylsilanes containing two hydrolyzable substituents per molecule are contacted with water at a temperature above 200° C. to produce high yields of low-molecular weight cyclic dimethylsiloxanes. The cyclic siloxanes are useful as fluids and as intermediates in preparing silicone rubber polymers.

3,627,806

CARBOXY-FUNCTIONAL HYDROLYZABLE SILANES

Gary E. LeGrow, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Dec. 29, 1969, Ser. No. 888,939

Int. Cl. C07f 7/18; C23c 11/06

U.S. Cl. 260—448.2 B **6 Claims**

Silanes of the formula $(HOOC)_mRSR'Si(R''_n)Y_{3-n}$ are made by adding unsaturated acids to $HSR'Si(R''_n)Y_{3-n}$ or by adding mercapto carboxylic acids to alkenyl-$Si(R''_n)Y_{3-n}$. For example, thioglycolic acid is added to vinyltrimethoxysilane in the presence of a free radical generator to give $HOOCCH_2SCH_2CH_2Si(OMe)_3$. The acids are used as adhesion promotors for silicon rubber.

3,627,807

METHOD OF PREPARING ORTHOSILICIC ACID TETRAALKYL ESTERS

Otto Bleh, Bergheim Nachtigallenweg; Walter Rogler, Ranzel Giersiingerstr. 6, and Wilhelm Joch, Niederkassel Gartenweg 4, all of Germany

Filed Aug. 18, 1969, Ser. No. 851,108

Claims priority, application Germany, Aug. 17, 1968, P 17 93 222.8

Int. Cl. C07f 7/18

U.S. Cl. 260—448.8 A **13 Claims**

Process for the preparation of orthosilicic acid tetraalkyl esters by the reaction of at least one of silicon, iron silicide and ferrosilicon with the corresponding alcohol in the presence of the corresponding alkali alcoholate which comprises carrying out the reaction in the presence of 70 to 99 percent by weight referred to the total amount of liquid present and preferably in the presence of 80 to 90 percent by weight of the orthosilicic acid tetraalkyl ester and continuously introducing the alcohol during the reaction.

3,627,808

PRODUCTION OF TRIPHENYLALUMINUM

Roland Streck, Marl, Germany, assignor to Chemische Werke Huels A.G., Marl, Germany

Filed Dec. 2, 1968, Ser. No. 780,575

Claims priority, application Germany, Dec. 8, 1967, P 16 43 839.4

Int. Cl. C07f 5/06

U.S. Cl. 260—448 A **12 Claims**

For the production of triphenylaluminum in high yields, $(C_6H_5)AlCl_{3-n}$ is reacted with AlR_3 wherein *n* is a member above O and less than 3 and R represents lower alkyl.

3,627,809

2-METHYLENE-3-BUTENYL ISOCYANATE AND PREPARATION THEREOF

Robert J. Thomas, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 24, 1969, Ser. No. 819,119

Int. Cl. C07c 119/04

U.S. Cl. 260—453 AL **4 Claims**

2-Methylene-3-butenyl isocyanate is prepared by the reaction of a quaternary ammonium cyanate with 2-chloromethyl-1,3-butadiene or the reaction of phosgene with 2-aminomethyl-1,3-butadiene. As a butadiene it is copolymerizable with butadiene, acrylonitrile and other olefinic monomers to produce polymers having pendant NCO groups and useful as adhesives. As an isocyanate it is reactive with active hydrogen compounds to produce urethanes, ureas, etc.

3,627,810

PROCESS FOR MAKING ORGANIC CARBONATES

Kuo Y. Chang, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 12, 1970, Ser. No. 2,365
Int. Cl. C07c *69/00*
U.S. Cl. 260—463 5 Claims

Carbonate esters of higher alcohols are made by the reaction of lower chloroformates with a solution of an alkali metal salt of a higher alcohol in a higher alcohol. The esters thus produced are essentially halogen-free and hence are especially useful in hydraulic fluids, lubricants and plasticizers.

3,627,811

ISOCYANO-DIPHENYL ETHERS AND THIOETHERS

Ingeborg Hammann, Cologne, Germany; Peter Hoffmann, Hollywood, Calif.; Helmut Kleimann, Leverkusen; Dieter Marquarding, Bonn; Klaus Offermann, Dormagen, all of Germany; Ivar Ugi, Santa Monica, Calif., and Gunter Unterstenhofer, Opladen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 1, 1969, Ser. No. 812,361
Claims priority, application Germany, Apr. 4, 1968, P 17 68 130.0
Int. Cl. A01n *9/20*; C07c *121/60*
U.S. Cl. 260—465 F 10 Claims

Isocyano-diphenyl ethers and thioethers, i.e. isocyano-(optionally mono- and di- chloro, alkyl and alkoxy)-4'-alkyl-diphenyl ethers and thioethers, or 1-(4'-alkyl- -phenoxy and -phenylmercapto)-(optionally 2,3,4,5 and/or 6-mono- and dichloro, alkyl and alkoxy)-phenyl-isocyanides, which possess pesticidal, especially acaricidal, properties.

3,627,812

COTELOMERS OF VINYL ESTERS OF LOWER ALKANOIC ACIDS

Joseph K. Hoffman, Oldwick, and James P. Russell, Berkeley Heights, both of N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Original application July 31, 1964, Ser. No. 386,593. Divided and this application Dec. 22, 1969, Ser. No. 887,026
Int. Cl. C07c *67/00, 69/16, 121/16*
U.S. Cl. 260—465.4 3 Claims

Cotelomers of vinyl esters of lower alkanoic acids, such as vinyl acetate, wherein the telogen is an alkanol containing up to eight carbon atoms, a lower alkyl ester of a lower alkanoic acid, acetonitrile, toluene, or a lower alkane glycol, and the cotaxogen is crotonic acid, a lower alkyl vinyl ether, an alpha-olefin, a lower alkyl maleate, aceylonitrile, vinyl cyclohexene, cyclododecene, vinylidene chloride, or acetylene, are produced by reacting the vinyl ester with the telogen at a temperature of 90° to 250° C. and at a pressure of 50 to 7,500 p.s.i. in the presence of a free-radical-forming catalyst or initiator effective for the polymerization of vinyl acetate, the vinyl ester and the telogen having a residence time in the reaction of 0.5 to 60 minutes, preferably 1 to 10 minutes.

3,627,813

PROCESS OF PREPARING CARBAMATES

Franklin W. Abbate, North Haven, and William J. Farrissey, Jr., North Branford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Feb. 3, 1969, Ser. No. 796,209
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C 10 Claims

N,N'-dihydrocarbylureas are converted to the corresponding alkyl N-hydrocarbylcarbamates by heating at 60° C. to 200° C. with a dialkylcarbonate in the presence of a base catalyst (tertiary amine preferred). The process can be applied to simple ureas and to compounds containing a plurality of 3-hydrocarbyl-ureido groups in the molecule. The process can also be employed to modify polyurethanes containing one or more urea linkages in the polymer chain; the latter is cleaved at one or more of the urea linkages with the formation of the corresponding carbamate-terminated polymer.

3,627,814

ALKYL CARBAMATE DERIVATIVES OF α-HYDROXYACETOPHENONE OXIME

Tomas L. Fridinger, Woodbury Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 16, 1970, Ser. No. 11,870
Int. Cl. C07c *131/00*
U.S. Cl. 260—482 C 5 Claims

N-alkyl- and N,N-dialkylcarbamates of α-hydroxyacetophenone oxime wherein both the oxime group and the hydroxy group are carbamoylated have insecticidal activity. The bis-(alkyl carbamates) may be prepared in one step by reaction of an excess of alkyl isocyanate with α-hydroxyacetophenone oxime, while the unsymmetrical carbamates are prepared e.g. by a series of steps in which the latter compound is e.g. reacted first with slightly more than one equivalent of one isocyanate, and then with an excess of a different isocyanate.

3,627,815

1-CYANOBICYCLO 2.1.0 PENTANE, 1-CYANOBICYCLO 3.1.0 HEXANE, THEIR HOMOPOLYMERS AND THEIR PREPARATION

Henry K. Hall, Jr., Tucson, Ariz., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 27, 1970, Ser. No. 15,213
Int. Cl. C07c *121/46*
U.S. Cl. 260—464 3 Claims

Described are the two polymerizable strained-ring compounds 1-cyanobicyclo[2.1.0]pentane and 1-cyanobicyclo[3.1.0]hexane and their respective solid homopolymers.

3,627,816

N-CARBONIC ACID DERIVATIVES OF CYANO CONTAINING 1,2-DICARBONYLPHENYLHDRAZONES

Karl Heinz Buchel; Wilfried Draber, both of Wuppertal-Elberfeld, and Ingeborg Hammann, Cologne, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 19, 1968, Ser. No. 785,391
Claims priority, application Germany, Jan. 2, 1968, P 16 68 071.0
Int. Cl. C07c *121/52, 121/60*
U.S. Cl. 260—465 D 8 Claims

N-carbonic acid derivatives of 1,2-dicarbonylphenylhydrazones, i.e. N-(alkoxy, phenoxy, alkylmercapto, cyclohexyloxy and dialkylamino- -carbonyl and -thiono)-N-(alkyl- and/or electronegative substituent [e.g. halo, haloalkyl, nitro and/or alkyl sulfonyl]- substituted phenyl)-N'-(α-cyano-α- [alkanoyl and carboalkoxy]-carbonyl)-hydrazones, which possess arthropodicidal, especially acaricidal and insecticidal, properties and which may be produced by reacting the corresponding alkali metal salt of a 1,2-dicarbonylphenylhydrazone, or such 1,2-dicarbonylphenylhydrazone in the presence of an acid-binding agent, with the corresponding carbonic acid chloride.

3,627,817

PROCESS FOR PREPARING ALIPHATIC DINITRILES FROM CYCLOHEXANE OR CYCLOHEXENE

Clive Barnett; John Dewing, and Anthony Howden Jubb, all of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Oct. 25, 1968, Ser. No. 770,825
Claims priority, application Great Britain, Nov. 6, 1967, 50,334/67
Int. Cl. C07c *121/02, 121/26*
U.S. Cl. 260—465.3 5 Claims

A process for the preparation of aliphatic dinitriles, particularly adiponitrile, by reacting cyclohexane or cyclohexene with ammonia and oxygen at elevated temperature in the presence of an antimony oxide catalyst.

3,627,818

BRANCHED DIESTERS

Edward S. Blake, Kettering, Ohio, assignor to Monsanto Research Corporation, St. Louis, Mo.

Original application Mar. 30, 1967, Ser. No. 626,955, now abandoned , Continuation-in-part of application Ser. No. 333,190, Dec. 24, 1963, now abandoned. Divided and this application Jan. 31, 1969, Ser. No. 825,459
Int. Cl. C07c *69/76*
U.S. Cl. 260—476 R 5 Claims

As new compounds, diesters of mono- and dicarboxylic acids, having terminal dimethyl(phenyl)methyl groups and having no hydrogen atoms on the beta carbon atoms of the alcohol or diol. They are useful as functional fluids and have high oxidative stability.

3,627,819

ADDUCTS OF ALKENYL ISOCYANATES WITH POLYGLYCOLS

Robert M. Nowak; James T. K. Woo, and Dietrich H. Heinert, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed July 16, 1969, Ser. No. 833,713
Int. Cl. C07c *125/06*
U.S. Cl. 260—482 B 5 Claims

Vinyl isocyanate and isopropenyl isocyanate react with polyalkylene glycols such as polyethylene glycol and polypropylene glycol to form the corresponding bis(N-alkenylcarbamate) esters. These divinyl monomers are particularly useful as cross-linking agents for modifying the properties of polymers such as polyvinyl acetate.

3,627,820

POLYMERIZATION PROCESS

Kiyoshi Chujo, and Toru Ikuta, both of Iruma-gun, Saitama, Japan, assignors to Daicel Ltd., Osaka, Japan

Filed Jan. 29, 1968, Ser. No. 701,096
Claims priority, application Japan, Jan. 25, 1967, 42/4575
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 R 6 Claims

A process for polymerizing a monomer or a mixture of monomers selected from the group consisting of acrylates, methacrylates, acrylonitrile, methacrylonitrile, acrylamide, methacrylamide, methylol acrylamide and ethers thereof, methylol methacrylamide and ethers thereof, acrylic acids, methacrylic acid and vinylidene chloride in the presence of a catalyst composition consisting of a complex compound of acetyl acetone with trivalent manganese and a mercaptan, whereby the polymerization may be carried out at room temperature.

3,627,821

PROCESS FOR THE MANUFACTURE OF UNSATURATED ESTERS OF CARBOXYLIC ACIDS

Kurt Sennewald; Wilhelm Vogt, both of Knapsack near Cologne; Heinz Erpenbach, Suert near Cologne; Hermann Glaser, Knapsack near Cologne, and Helmut Dyrschka, Koettingen, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack bei Cologne, Germany

Filed Dec. 18, 1968, Ser. No. 784,872
Claims priority, application Germany, Dec. 23, 1967, P 16 68 350.4
Int. Cl. C07c *69/14*
U.S. Cl. 260—497 A 7 Claims

Production of unsaturated esters of carboxylic acids by reaction of an olefinic compound and an aliphatic or aromatic carboxylic acid, which each contain from two to 20 carbon atoms, with molecular oxygen or air, in the gas phase, at elevated temperature and in contact with a carrier catalyst, the reaction being carried out in contact with a carrier catalyst containing palladium acetate, alkali metal acetate and one or more uranium compounds as its active constituents.

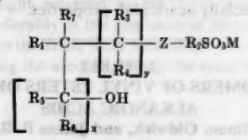
3,627,822

NOVEL COMPOUNDS WITH DETERGENCY AND FABRIC-SOFTENING ABILITY AND METHOD OF MAKING THE SAME

Bjorn Sundby, Highland Park, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 29, 1968, Ser. No. 780,276
Int. Cl. C07c *143/10*
U.S. Cl. 260—513 15 Claims

Novel compounds of the formula:



wherein:

(1) R_1 is a straight or branched higher alkyl group of C_8 to C_{30}, and preferably C_{10} to C_{22};

(2) R_2 is a stright or branched alkyl of C_3 to C_{12}, and preferably C_3 to C_5;

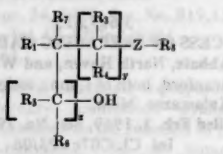
(3) R_3 to R_7 are, independently, hydrogen or straight or branched alkyl of C_1 to C_{10}, and preferably hydrogen or lower alkyl of C_1 to C_4;

(4) Z is oxygen (—O—) or sulfur (—S—);

(5) x and y have the values 0 or 1 and $x+y=1$; and

(6) M is a cation such as hydrogen, alkali metal, ammonium, substituted ammonium or amine and preferably a water-solubilizing, salt-forming group.

Such novel compounds uniquely possess both foaming and detergency characteristics and fabric softening ability. The novel compounds may be prepared by several alternate routes, among which is the reaction of a long chain epoxide with an unsaturated alcohol or its equivalent with subsequent sulfonation of the intermediate reaction product. The novel intermediate reaction product with an unsaturated alcohol corresponds to the formula:



wherein R_1, R_3 to R_7, x and y are as defined above and R_8 is a straight or branched mono-unsaturated group, preferably an alkenyl radical, more preferably an α-olefinic alkenyl radical of C_3 to C_{12}, and most preferably of C_3 to C_6.

3,627,823

PROCESS FOR THE PREPARATION OF ACETIC ACID

Rudolf Brockhaus, and Willi Ziegenbein, both of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed Oct. 29, 1968, Ser. No. 771,632
Claims priority, application Germany, Nov. 7, 1967, P 16 43 822.5
Int. Cl. C07c 53/08
U.S. Cl. 260—530 R 3 Claims

Acetic acid is produced by the gaseous phase oxidation of short-chain aliphatic compounds, with oxygen or an oxygen-supplying gas, in the presence of water vapor, at a temperature within the 200°–400° C. range, using a metal-vanadate catalyst.

3,627,824

PROCESS FOR CRYSTALLIZING γ-ALKYLMERCAPTOLYSINE DIHYDROCHLORIDE

Yasuo Fujimoto, and Shinsuke Koshimoto, both of Machidashi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd.

Filed June 18, 1969, Ser. No. 834,524
Claims priority, application Japan, June 25, 1968, 43/43628
Int. Cl. C07c 149/24
U.S. Cl. 260—534 S 14 Claims

A process for obtaining substantially pure crystals of γ-alkylmercaptolysine dihydrochloride which comprises mixing an aliphatic or alicyclic alcohol, an organic ether or a mixture thereof with a methanolic or an aqueous methanolic solution of a γ-alkylmercaptolysine dihydrochloride and preferably maintaining the mixture at a low temperature, thereby forming crystals of said compound. The product is useful as an antioxidant and as an accelerator for the cure of cuts, burns and the like.

3,627,825

PURIFICATION OF 1,12-DODECANEDIOIC ACID USING PERCHLOROETHYLENE

Darwin D. Davis, Victoria, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 29, 1969, Ser. No. 829,136
Int. Cl. C07c 51/48
U.S. Cl. 260—537 R 3 Claims

A process for the purification of 1,12-dodecanedioic acid by contacting molten 1,12-dodecanedioic acid with an organic solvent having the formula $C_nX_mH_{2n+2-m}$ or $C_pX_mH_{2p-m}$ wherein X is a halogen, n is an integer of from 1 to 3, p is 2 or 3, and m is an integer from 3 to $2n+2$ or $2p$. After contacting the 1,12-dodecanedioic acid is crystallized by lowering the temperature followed by removal of the acid crystals from the halogenated hydrocarbon solvent and dissolved impurities by filtration.

3,627,826

PROCESS FOR HALOGENATING CARBOXYLIC ACIDS

Charles M. Selwitz, Monroeville, Pa., assignor to Gulf Research Development Company, Pittsburgh, Pa.

Filed Nov. 25, 1970, Ser. No. 92,938
Int. Cl. C07c 53/16, 53/32
U.S. Cl. 260—539 A 12 Claims

A process for chlorinating or brominating a carboxylic acid which involves heating a carboxylic acid with chloride ions or bromide ions and molecular oxygen in the presence of nitrate ions, a carboxylic acid anhydride and a heavy metal cation. Acetic acid is converted to chloroacetic acid.

3,627,827

REACTION OF ALLYLIC HALIDES WITH CARBON MONOXIDE AND ACETYLENE

John A. Scheben, Erlanger, Ky., assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 496,686, Oct. 15, 1965, now abandoned. This application Nov. 14, 1968, Ser. No. 775,961
Int. Cl. C07c 51/14
U.S. Cl. 260—544 A 9 Claims

A process is provided for preparing 2,5-dienoyl halides, which comprises reacting a β,γ-unsaturated alkylene halide with carbon monoxide and acetylene at a temperature within the range from about 20° to about 250° C. at which reaction proceeds, below the decomposition temperature of the reactants and reaction products, under a pressure within the range from about 1 to about 300 atmospheres in the presence of a platinum-palladium triad catalyst.

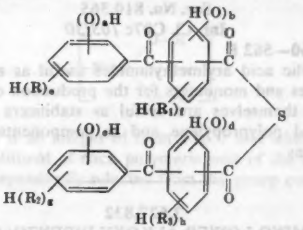
3,627,828

HYDROXY BENZOYL BENZOIC THIOLANHYDRIDE

Stanley B. Mirviss, Stamford, Conn., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Dec. 30, 1968, Ser. No. 789,973
Int. Cl. C07c 153/00
U.S. Cl. 260—545 R 2 Claims

Vinyl polymer compositions are stabilized against degradation and discolorization due to heat by adding to the polymer a stabilizing amount of a novel compound of the formula:



wherein R, R_1, R_2 and R_3 are divalent acyclic essentially hydrocarbon radicals containing from one to about six carbon atoms, a and c are integers having values of from 0 to 1 inclusive, b and d are integers having values of from 0 to 1 inclusive, and e, f, g and h are integers having values of 0 to 1.

3,627,829

P-TOLUENESULFONYLISOTHIOCYANATE

Adnan A. R. Sayigh, North Haven, and Henri Ulrich, Northford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Original application Jan. 18, 1965, Ser. No. 426,414, now Patent No. 3,467,651. Divided and this application June 6, 1969, Ser. No. 831,248
Int. Cl. C07c 161/04
U.S. Cl. 260—545 R 3 Claims

Hydrocarbylsulfonylisothiocyanates are obtained by phosgenation of the appropriate 1-(hydrocarbylsulfonyl)-3-arylthiourea to form the corresponding 1-aryl-4-hydrocarbylsulfonylimino-1,3-thiazetidine-2-one and heating the latter at 150° C. to 200° C. Alternatively, the hydrocarbylsulfonylisothiocyanates are obtained directly by phosgenation of the appropriate 1-(hydrocarbylsulfonyl)-3-alkylthiourea. The hydrocarbylsulfonylisothiocyanates are intermediates to the corresponding antidiabetic sulfonylthioureas and to the corresponding 3-hydrocarbylsulfonyl-1,3-diazetidine-3-thiones.

3,627,830

PRODUCTION OF PURE-N-DIMETHYLACYLAMIDES

Horst Kerber, Lake Jackson, Tex.; Heinz Hohenschutz, Mannheim, and Konrad Rauch, Limburgerhof, both of Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Filed Feb. 3, 1969, Ser. No. 796,186
Int. Cl. C07c *103/00*
U.S. Cl. 260—561 R 7 Claims

Production of pure N-dimethylacylamides having from two to four carbon atoms in the acyl radical by reaction of an excess of dimethylamine with an aliphatic carboxylic acid having two to four carbon atoms at elevated temperature and distillation of the N-dimethylacylamide formed, the distillation being carried out continuously in a column. Dimethylamine and the carboxylic acid in the molar ratio from 1.1:1 to 5:1 are introduced at from 80° to 220° C. and from 0.1 to 2 atmospheres in the absence of any catalyst into a mixture of N-dimethylacylamide and its carboxylic acid, the carboxylic acid content of the mixture corresponding at least to the amount of carboxylic acid present in the azeotropic mixture of the N-dimethylacylamide and its carboxylic acid. N-dimethylacylamides are used as solvents for polymers.

3,627,831

CARBOXYLIC ACID AMIDES

Helmut Huber-Emden, Basel; Paul Schaefer, Riehen, and Arthur Maeder, Therwil, all of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Continuation-in-part of application Ser. No. 536,265, Mar. 22, 1966, now abandoned. This application Mar. 25, 1969, Ser. No. 810,365
Int. Cl. C07c *103/30*
U.S. Cl. 260—562 P 8 Claims

Carboxylic acid arylmethylamides useful as antioxidants, bactericides and monomers for the production of polymers, which by themselves are useful as stabilizers for natural rubber and polypropylene and as components in coating preparations.

3,627,832

AMINO-LOWER-ALKOXY-DIBENZO[A,D] CYCLOHEPTENES AND 5-ALKYL AND -ARALKYL DERIVATIVES

John W. Schulenberg, and Sydney Archer, both of Bethlehem, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Original application Oct. 16, 1964, Ser. No. 404,506, now Patent No. 3,350,405. Divided and this application Apr. 24, 1967, Ser. No. 632,948
Int. Cl. C07c *93/06*
U.S. Cl. 260—570.7 4 Claims

Dibenzo[a,d]cyclohepten-5-ones and 10,11-dihydro derivatives thereof substituted on one of the benzene rings by an amino-lower-alkoxy group are prepared by reacting the corresponding hydroxydibenzo[a,d]cyclohepten-5-ones with an amino-lower-alkyl halide. The 5-carbonyl group is subsequently converted by reduction, Grignard and dehydration reactions to the groups CH_2, CH(OH), C(lower-alkyl)(OH), C(phenyl-lower-alkyl)(OH), C (lower-alkylidene), C (phenyl-lower-alkylidene), CH(lower-alkyl) or CH(phenyl-lower-alkyl). The compounds are useful as antidepressant agents.

3,627,833

PREPARATION OF DIHYDRORESORCINOL

Michael A. Tobias, Edison, N.J., assignor to Mobil Oil Corporation

Filed July 5, 1968, Ser. No. 742,480
Int. Cl. C07c *49/27*, *45/00*
U.S. Cl. 260—586 R 1 Claim

2,3-Epoxycyclohexanone is rearranged thermally to dihydroresorcinol. Dehydrogenation of dihydroresorcinol produces resorcinol.

3,627,834

PROCESS AND STABILIZING COMPOSITIONS FOR CHLOROFLUOROALKANES

Germano Patron, Venezia, Italy, assignor to Montecatini Edison S.p.A., Milan, Italy

Filed Jan. 14, 1969, Ser. No. 791,145
Claims priority, application Italy, Jan. 18, 1968, 11718A/68
Int. Cl. C07c *17/42*
U.S. Cl. 260—652.5 R 4 Claims

This specification discloses the stabilization of chlorofluoroalkanes and mixtures thereof against hydrolysis in the presence of substances of a polar character, and in particular the stabilization of CCl_3F, CCl_2F_2, $CCl_2F—CClF_2$, $CClF_2—CClF_2$, by incorporating either into the chlorofluoroalkane or into the mixture to be nebulized by it, as stabilizer, a composition comprising at least one alkylene epoxide associated with at least one substance chosen from the group consisting of linear and/or cyclic olefines and/or of simple and/or alkyl-substituted hydrazones of aliphatic and/or aromatic aldehydes.

3,627,835

1,3,5-TRIS-(2'-HYDROXY-BENZOYL)-BENZENES

Heimo Brunetti, Erlenstrasse 9, Reinach, Basel land; Hans-Jakob Peterli, Ob. Hofackerstr .27, Fullinsdorf, Basel land; Helmut Muller, Schafmaltweg 78, Binningen, Basel land, and Hansjorg Heller, Dornliweg 1, Riehen/BS, all of Switzerland

Filed Nov. 21, 1969, Ser. No. 878,871
Int. Cl. C07c *49/80*, *49/82*
U.S. Cl. 260—591 9 Claims

1,3,5-tris-(2'-hydroxy-benzoyl)-benzenes are stabilizers for organic material. The compounds are obtained through dealkylating of the corresponding ethers.

3,627,836

MODIFIED ORGANOPOLYSILOXANES WITH MONO AND POLYOLEFINIC CROSS-LINKED PARTICLES GENERATED IN SITU

John Charles Getson, Tecumseh, Mich., assignor to Stauffer-Wacker Silicone Corporation

Filed Nov. 15, 1968, Ser. No. 776,863
Int. Cl. C08g *47/10*
U.S. Cl. 260—825 10 Claims

Modified organopolysiloxanes containing cross-linked particles generated in situ are prepared by grafting monofunctional and polyfunctional olefinic monomers to organopolysiloxanes. These modified silicones are resistant to the solubilizing effect of solvents.

3,627,837

GRAFTING OF PREFORMED POLYMER SIDE CHAINS ON METALATED BACKBONE POLYMER

Frederick J. Webb, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Nov. 25, 1968, Ser. No. 778,776
Int. Cl. C08g *45/04*; C08f *15/00*
U.S. Cl. 260—836 15 Claims

The process disclosed herein comprises the grafting of preformed polymer chains onto a metalated backbone polymer which has metal atoms such as lithium attached at various points along the polymer chain and the grafting preformed polymer chains have a functional group, such as a nitrile, or a ketone or an aldehyde group, which is capable of reacting with and replacing the metal atom attached to the backbone polymer. In this way grafted copolymers are prepared having sidebranches disposed according to the number and positioning of the metal atoms originally at-

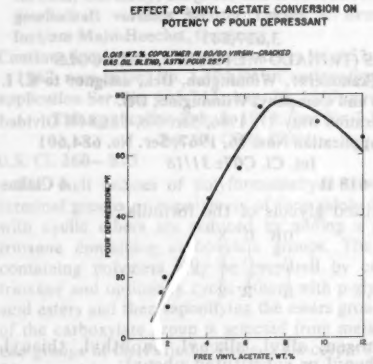
tached to the backbone polymer. In this way it is possible to make grafted copolymers of more uniform and more controllable side branching and therefore of improved properties.

3,627,838

PROCESS FOR MANUFACTURING POTENT POUR DEPRESSANTS

Stephan Ilnyckyj, Islington, Ontario; John L. Tiedje, Sarnia, Ontario, and Frank P. Gielzecki, Sarnia, Ontario, all of Canada, assignors to Esso Research and Engineering Company Continuation-in-part of Ser. No. 417,680, Dec. 11, 1964, abandoned.

Filed Nov. 27, 1968, Ser. No. 779,555
Int. Cl. C08f *15/02, 25/00, 37/00*
U.S. Cl. 260—87.3 **2 Claims**


EFFECT OF VINYL ACETATE CONVERSION ON POTENCY OF POUR DEPRESSANT
0.05 WT.% COPOLYMER IN 50/50 VIRGIN-CRACKED GAS OIL BLEND, ASTM POUR 25°F
POUR DEPRESSION, °F
FREE VINYL ACETATE, WT.%

A method of producing copolymers of ethylene and 28 to 60 weight percent vinyl acetate of 2,000 to 6,000 mol weight for use as pour depressants by charging solvent, vinyl acetate and ethylene to a reactor until the concentration of vinyl acetate in said solvent is 6 to 10 weight percent and the pressure is 700 to 2000 p.s.i., heating to 280° to 340° F. and then adding promoter to start the polymerization and thereafter adding additional promoter and vinyl acetate to maintain the concentration of vinyl acetate in the 6 to 10 weight percent range during the course of the reaction.

3,627,839

GRAFT POLYMER OF ETHYLENICALLY UNSATURATED MONOMER ONTO A HALO-SUBSTITUTED BRANCHED POLYETHER POLYMER, AND PROCESS FOR MAKING IT

Edwin J. Vandenberg, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Nov. 26, 1968, Ser. No. 779,232
Int. Cl. C08f *29/12*
U.S. Cl. 260—874 **14 Claims**

Disclosed is a branched polyether polymer modified by a graft to at least one branch, composed of at least one free radically polymerizable ethylenically unsaturated monomer unit and usually a polymer of free radically polymerizable ethylenically unsaturated monomer material. The graft polymer is made by effecting reaction of (1) a branched polyether polymer with at least one branch being reactive halo-substituted, and (2) free radically polymerizable ethylenically unsaturated monomer material by means of a catalyst comprising a transition metal-labile ligand complex with the transition metal portion of the complex being in a valence state less than its maximum valence state, preferably in the zero valence state.

3,627,840

PROCESS FOR MAKING IMPACT RESISTANT BLENDS AND POLYMER BLENDS PRODUCED THEREBY

Ludwig A. Beer, Agawam, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 30, 1968, Ser. No. 788,051
Int. Cl. C08f *19/18, 41/12, 19/10*
U.S. Cl. 260—876 R **15 Claims**

A novel graft copolymer blend is prepared having an ethylene interpolymer rubbery substrate and a graft superstrate of an interpolymer of a monovinylidene aromatic hydrocarbon, an alkyl (alk)acrylate, and/or an ethylenically unsaturated nitrile. The ethylene interpolymer contains vinyl chloride and/or vinylidene chloride. The superstrate may be of uniform polymeric composition or it may be formed by two or more different polymers having differing polarity. Blends of such graft copolymer blends with vinyl chloride polymers having a high degree of transparency are also disclosed.

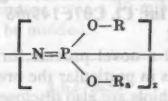
3,627,841

CYCLIC POLYMERIC CHLOROMETHYLPHENOXY PHOSPHONITRILES

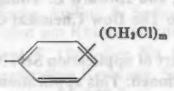
Ehrenfried H. Kober, Hamden; Henry F. Lederle, North Haven, and Gerhard F. Ottmann, Hamden, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Original application Nov. 15, 1965, Ser. No. 507,660, now Patent No. 3,450,799. Divided and this application June 3, 1968, Ser. No. 777,927
Int. Cl. C07d *105/02;* **C07f** *9/24;* **C09j** *3/28*
U.S. Cl. 260—927 N **2 Claims**

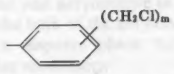
Cyclic polymeric chloromethylphenoxy phosphonitriles having the formula:



wherein x is an integer of from 3 to 7 and wherein the R and R_a substituent of each polymeric unit of the above formula areindependently selected from the group consisting of phenyl or



wherein m is an integer of from 1 to 3 inclusive and with the proviso that at least one of the R and R_a substituents is



3,627,842

PROCESS FOR THE PREPARATION OF MONOHALOGENATED METHYLENEDIPHOSPHONATE ESTERS, AND PHOSPHONOACETATE ESTERS

Denzel Allan Nicholson, Springfield Township, Hamilton County, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Dec. 24, 1968, Ser. No. 786,760
Int. Cl. C07f *9/40*
U.S. Cl. 260—986 **18 Claims**

A process for the preparation of tetrahydrocarbyl monohalomethylenediphosphonate esters, dihydrocarbyl monohalomalonate esters and trihydrocarbyl monohalophosphonoacetate esters, wherein the hydrocarbyl groups have one to 22 carbon atoms, comprising reacting the corresponding dihalomethylenediphosphonate esters, dihalomalonate esters and dihalophosphonoacetate esters

with a reducing agent, e.g., sulfite ion in base or sulfide ion in base. The monohalomethylenediphosphonate esters, monohalomalonate esters and monohalophosphonoacetate esters are useful as intermediates in the preparation of detergency builders for use in detergent compositions and as extreme pressure additives and antiwear additives in lubricant compositions.

3,627,843

HYDROFORMYLATION OF PROPENE

Gianfranco Pregaglia, Milan; Alberto Andreetta, and Luigi Benzoni, both of Novara, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed Mar. 13, 1968, Ser. No. 712,624
Int. Cl. C07c 45/08
U.S. Cl. 260—604 HF 2 Claims

Described is an improved process for preparing butyric aldehydes by hydroformylation of propene in the presence of cobalt-carbonyls complexed with phosphines. The process is characterized in that a reaction medium is used chosen from among N.N-dialkyl-amides, tetra-alkyl-ureas, aliphatic nitriles and dinitriniles, containing from two to 12 carbon atoms. The operating temperatures are between 110° and 220° C. and the operating pressures of $CO+H_2$ are between 20 and 400 atmospheres.

3,627,844

PREPARATION OF ALKENYL-THIOLS

Pierre Legendre, Pau, France, assignor to Societe Nationale Des Petroles D'Aquitaine, Courbevoie, France

Filed Aug. 8, 1968, Ser. No. 751,034
Claims priority, application France, Aug. 9, 1967, 117339
Int. Cl. C07c 149/08
U.S. Cl. 260—609 R 18 Claims

There is provided a novel process for the preparation of certain alkenyl-thiols in particular the preparation of halo-alkenyl-thiols. Novel thiols are also disclosed.

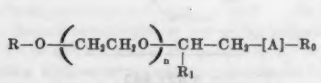
3,627,845

POLYLOXY ALKYLENE SULFIDES

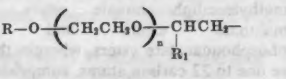
Richard A. Hickner, and Howard L. Young, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 573,500, Aug. 19, 1966, now abandoned. This application Aug. 9, 1968, Ser. No. 751,371
Int. Cl. C07c 149/14
U.S. Cl. 260—609 A 9 Claims

Compounds of the formula



wherein R is an alkyl or aralkyl group; each n is an integer of from five to 50; A is a sulfide, sulfoxide or sulfone group; R_1 is hydrogen or a lower alkyl group; and R_2 is a halophenyl group, an alkyl or aralkyl group, halophenylethyl or halobenzyl group, or a group of the formula



wherein R, R_1 and n are defined above. These compositions have surfactant and/or biological utilities.

3,627,846

PROCESS FOR OBTAINING PARTICULARLY PURE 2,2-BIS-(PHENYLOL)-PROPANE

Karl-Heinrich Meyer, Krefeld-Bockum, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of application Ser. No. 538,234, Mar. 29, 1966, now abandoned. This application Oct. 16, 1968, Ser. No. 768,968
Int. Cl. C07c 39/16; C08f 7/10
U.S. Cl. 260—619 4 Claims

Process for obtaining particularly pure bisphenol A from a crude mixture obtained by reacting acetone with excess phenol comprising degassing the crude mixture to remove acetone and HCl by subjecting the mixture to reduced pressure, separating the crystalline addition product of phenol and bisphenol A precipitating from the mixture, washing the precipitate with phenol and splitting it into bisphenol and phenol.

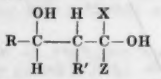
3,627,847

1, 1-BIS (TRIHALO-METHYL)-1,3-GLYCOLS

Carl M. Langkammerer, Wilmington, Del., assignor to E. I. de Nemours and Company, Wilmington, Del.

Original application May 17, 1966, Ser. No. 551,844. Divided and this application Nov. 16, 1967, Ser. No. 684,601
Int. Cl. C07c 31/18
U.S. Cl. 260—618 D 4 Claims

1,3-substituted glycols of the formula:



wherein

R is hydrogen, alkyl, alkenyl, naphthyl, thienyl, furyl, phenyl or substituted phenyl;
R′ is hydrogen or alkyl;
R and R′ can be joined;
X and Z are separately trifluoromethyl or chlorodifluoromethyl.

Typical is α-[(2-hydroxy-1-methyl-3,3,3-trifluoro-2-trifluoromethyl)propyl] benzyl alcohol useful in riot control.

3,627,848

1-BROMO-3,4-DICHLOROBUTANE

Jay Lyman Bishop, Summit, N.J., assignor to CIBA Corporation, Summit, N.J.

Continuation-in-part of application Ser. No. 761,805, Sept. 23, 1968, Continuation-in-part of application Ser. No. 761,822, Sept. 23, 1968. This application Mar. 21, 1969, Ser. No. 809,374
Int. Cl. C07c 19/02
U.S. Cl. 260—652 1 Claim

Cyclopropylmethyl chloride or its homologs, which are valuable intermediates or drugs, are prepared by addition of hydrogen bromide to dichloro-n-butenes or their homologs and reaction of the resulting 1-bromo-3,4-dichlorobutanes with metals.

3,627,849

PROCESS FOR THE MANUFACTURE OF ALLYL CHLORIDE OR METHALLYL CHLORIDE

Hans Fernholz, Fischbach/Taunus, and Heinz Wendt, Sulzbach/Taunus, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed Apr. 2, 1969, Ser. No. 812,906
Claims priority, application Germany, Apr. 19, 1968, P 17 68 242.7
Int. Cl. C07c 21/00
U.S. Cl. 260—654 R 8 Claims

A process for the manufacture of allyl chloride or methallyl chloride, which comprises reacting allyl acetate or methal-

lyl acetate with dry gaseous hydrogen chloride in the presence of 0.01 to 10 percent by weight of a catalyst comprising a mixture of a salt of monovalent or bivalent copper selected from the group consisting of CuCl, $CuCl_2$, CuBr, $CuBr_2$, $CuOOC.CH_3$, $Cu(OOC.CH_3)_2$, Cu_2SO_4, $CuSO_4$ and mixtures thereof, with a halogen containing Lewis acid selected from the group consisting of $FeCl_3$, $AlCl_3$, $AlBr_3$, $ZnCl_2$, $TiCl_4$, $BeCl_2$, $ZrCl_4$, $SbCl_5$ and $BiCl_3$ at temperatures within the range of from 20° to 200° C. wherein the copper salt in the mixture is present in proportionate amounts equal to or less than the Lewis acid component.

3,627,850

POLYOXYMETHYLENE POLYMERS HAVING REDUCED MELT INDICES

Karl-Heinz Hafner, Bad Orb, and Edgar Fischer, Frankfurt/am, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/am Main-Hoechst, Germany

Continuation-in-part of application Ser. No. 651,970, July 10, 1967, now Patent No. 3,494,893, Continuation-in-part of application Ser. No. 663,743, Aug. 28, 1967, now abandoned. This application Feb. 9, 1970, Ser. No. 9,889

Int. Cl. C08g *37/04*

U.S. Cl. 260—823 **7 Claims**

The melt indices of polyformaldehyde having stabilized terminal groups or copolymers of formaldehyde or trioxane with cyclic ethers are reduced by adding a copolymer of trioxane containing carboxylate groups. The carboxylate-containing polymers may be prepared by copolymerizing trioxane and optionally cyclic ethers with p-glycidyl benzoic acid esters and then saponifying the esters groups. The metal of the carboxylate group is selected from metals of the first two groups of the Periodic Table. By incorporating from 1 to 50 percent by weight of the carboxylate-containing polymers in conventional polyoxymethylene polymers, the melt indices thereof are substantially reduced.

3,627,851

FLEXIBLE COATING COMPOSITION

Sam A. Brady, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Oct. 23, 1970, Ser. No. 83,620

Int. Cl. C08g *47/02, 47/04, 47/06*

U.S. Cl. 260—825 **5 Claims**

A mixture of a polydiorganosiloxane gum having vinyl radicals and/or hydroxyl radicals, a benzene soluble copolymer having dimethylhydrogensiloxy units, trimethylsiloxy units and SiO_2 units and a platinum catalyst cured to a clear flexible coating.

3,627,852

IMPACT RESISTANT POLYMER COMPOSITIONS

Itsuho Aishima, Tokyo; Hisaya Sakurai, Kawasaki-shi; Atsushi Kitaoka, and Yoshihiko Katayama, both of Nobeoka-shi, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Kita-ku, Osaka, Japan

Filed Jan. 22, 1968, Ser. No. 699,313

Claims priority, application Japan, Feb. 2, 1967, 42/6295

Int. Cl. C08f *29/12, 15/04*

U.S. Cl. 260—876 B **7 Claims**

A polypropylene composition having an excellent impact resistance at low temperatures comprising 50–90 percent by weight of crystalline polypropylene, 5–30 percent by weight of polyethylene and 5–40 percent by weight of ethylene/propylene block copolymer having an average molecular weight of not less than 10,000, an ethylene content of 7–93 mol percent and an optional recurring cycle.

3,627,853

CHLORINATION OF VINYL CHLORIDE BLOCK COPOLYMERS

Alexander Edward Bond, and Bruce Robert Owen Pointer, both of Welwyn Garden City, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 1, 1969, Ser. No. 846,913

Claims priority, application Great Britain, Aug. 22, 1968, 40,235/68

Int. Cl. C08f *15/00, 27/02*

U.S. Cl. 260—878 B **15 Claims**

Chlorination of heterogeneous copolymers made by polymerizing vinyl chloride and adding a small amount of comonomer after conversion has reached >40 percent and continuing polymerization at an elevated temperature.

3,627,854

HEAT STABILIZED POLY(VINYLFLUORIDE) WITH A POLY(VINYLPYRIDINE)

Lacey E. Scoggins, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Dec. 14, 1971, Ser. No. 862,476

Int. Cl. C08f *29/22*

U.S. Cl. 260—884 **5 Claims**

Poly(vinylfluoride) is heat stabilized by addition thereto of a poly(vinylpyridine), e.g., poly(4-vinylpyridine) poly(2-methyl-5-vinylpyridine). From about 0.5 to 20 weight percent, now preferably 1 to 3 percent, approximately of the stabilizer is added to the poly(vinylfluoride) to protect it against thermal decomposition. Though poly(vinylfluoride) homopolymer decomposes rapidly in about 1 to 7 minutes at 260° C. and cannot be molded without use of a latent solvent, with the poly(vinylpyridine), decomposition does not occur at this temperature over a 30-minute period. This allows the polymer to be molded.

3,627,855

PRODUCTION OF IMPACT-RESISTANT STYRENE COPOLYMERS

Otto Schott, Mannheim; Klaus Bronstert, Carlsberg Upper palatinate; Adolf Echte; Juergen Hofmann, and Dieter Stein, all of Ludwigshafen am Rhine, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhime, Germany

Filed Sept. 5, 1967, Ser. No. 665,237

Claims priority, application Germany, Sept. 10, 1966, P 15 95 343.2

Int. Cl. C08f *15/04, 1/04, 1/11*

U.S. Cl. 260—880 R **2 Claims**

Production of impact-resistant styrene copolymers by polymerizing styrene and acrylonitrile in the presence of butadiene polymers, the bulk of the acrylonitrile being added to the system after a disperse phase has formed from the homogeneous rubber monomers.

3,627,856

RUBBER COMPOSITIONS CONTAINING A POLYHYDROXY DIENE POLYMER

Marc O. Thienot, Park Forest, Ill., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Nov. 17, 1969, Ser. No. 877,444

Int. Cl. C08f *41/12;* **C08d** *9/08*

U.S. Cl. 260—889 **13 Claims**

Sheeted rubber compositions of ethylene-propylene polymers having improved tack and easier processing and faster dispersion of compounding ingredients are obtained by forming a blend of the ethylene-propylene polymer and from about 1 to 50 percent by weight of a polyhydroxy 1,3-diene polymer, particularly a polyhydroxy acrylonitrile-butadiene polymer, having primary, terminal allylic hydroxyl groups and the majority of its unsaturation in the main carbon chain. Further improvement in tack is obtained by pressure treatment of these rubber sheetings against a "Mylar" or "-

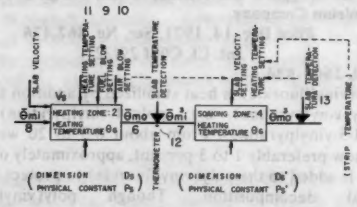
Teflon" sheet. Sufficient tack is obtained so that the unsupported rubber sheetings will readily stick together during fabrication of rubber articles, such as tires. The compounded blend can be covulcanized to produce elastomers of good mechanical properties.

3,627,857

HEATING CONTROLLING SYSTEM IN A MULTIZONE TYPE CONTINUOUSLY HEATING FURNACE

Hiroshi Matuno, and Toshiya Morisue, both of Kitakyushu, Japan, assignors to Yawata Iron & Steel Co., Ltd., Tokyo, Japan

Filed Feb. 12, 1969, Ser. No. 798,729
Claims priority, application Japan, Feb. 15, 1968, 43/9540
Int. Cl. F27b *9/40*
U.S. Cl. 263—52 **1 Claim**



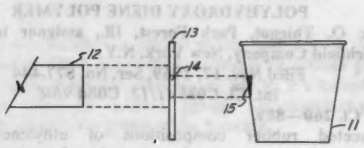
A heating controlling system in a multizone-type continuously heating furnace having a preheating zone, heating zone and soaking zone in sequence for obtaining an object heated in the furnace which may be extracted from the soaking zone at any objected temperature by determining the temperature of the heated object at the inlet of the heated zone from the atmospheric temperature in the preheating zone and other factors, controlling quantity of fed heat in the heating zone from said temperature and then adjusting quantity of fed heat or moving velocity of the heated object in the soaking zone.

3,627,858

METHOD FOR SELECTIVELY FOAMING THE SURFACE OF A THERMOPLASTIC ARTICLE BY USE OF A LASER

Leo P. Parts, Dayton, Ohio; Jules Pinsky, West Hartford, Conn., and Edgar E. Hardy, Kettering, Ohio, assignors to Monsanto Research Corporation, St. Louis, Mo.

Filed Nov. 24, 1969, Ser. No. 879,485
Int. Cl. B29d *27/00*; H05b *7/00*; H01s *3/00*
U.S. Cl. 264—25 **3 Claims**



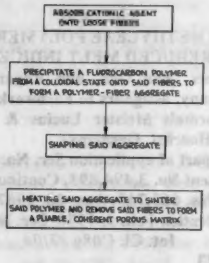
A method for foaming a design on the surface of a thermoplastic article, using laser radiation to produce an embossed surface with sharp definition.

3,627,859

PROCESS FOR FORMING POROUS FLUOROCARBON POLYMER MATRICES

Edward C. Mesite, Jenkintown, Pa., and Solomon Rosenblatt, Montclair, N.J., assignors to Leesona Corporation, Warwick, R.I.

Continuation of application Ser. No. 543,786, Apr. 20, 1966, now abandoned , Continuation-in-part of application Ser. No. 491,864, Sept. 30, 1965, now abandoned. This application Aug. 12, 1969, Ser. No. 850,339
Int. Cl. B29d *27/08*
U.S. Cl. 264—49 **19 Claims**


ABSORB CATIONIC AGENT ONTO LOOSE FIBERS
PRECIPITATE A FLUOROCARBON POLYMER FROM A COLLOIDAL STATE ONTO SAID FIBERS TO FORM A POLYMER-FIBER AGGREGATE
SHAPING SAID AGGREGATE
HEATING SAID AGGREGATE TO SINTER SAID POLYMER AND REMOVE SAID FIBERS TO FORM A PLIABLE, COHERENT POROUS MATRIX

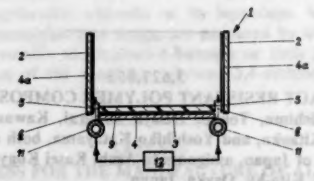
A method of preparing a porous hydrophobic polymeric matrix is described comprising precipitating a hydrophobic polymer onto loose fibers having a charge opposite to that of said polymer to form a polymer-fiber aggregate, shaping said aggregate, heating said shaped aggregate at an elevated temperature at which said precipitated polymer will sinter and said fibers consumed, and maintaining said aggregate at said elevated temperature for a time sufficient to sinter the polymer and consume the fibers, forming a pliable and coherent porous matrix.

3,627,860

METHOD OF FORMING RECTANGULAR CROSS-SECTION FOAM POLYURETHANE BY DIRECTING UPWARD CURRENTS OF AIR ALONG THE SIDES OF THE FORMING TROUGH

Werner Hagen, Unterpfaffenhofen near Munich, Germany, assignor to Metzeller AG, Munich, Germany

Filed Aug. 20, 1968, Ser. No. 754,078
Claims priority, application Germany, Aug. 21, 1967, P 17 04 846.3
Int. Cl. B29d *27/04*
U.S. Cl. 264—51 **8 Claims**

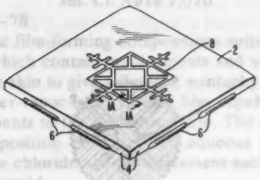


A continuous slab of rectangular cross-sectional outline is formed by feeding free-rising polyurethane foam into a trough formed by travelling bottom and lateral liners of release paper so that such foam forms a continuous loaf which travels lengthwise through a foaming zone wherein it rises to form the slab. Friction between lateral liners and the sides of the loaf is reduced by currents of gas which are blown upwardly along the edges of the bottom liner.

3,627,861
METHOD OF FORMING INDENTED DECORATIVE PATTERNS ON CERAMIC TILE

Robert F. Timke, Fruitland Park, Fla., assignor to Accentile, Inc.

Filed July 26, 1968, Ser. No. 754,137
Int. Cl. B28b *3/04, 7/06, 7/16*
U.S. Cl. 264—56 6 Claims



Ceramic tile having indented decorative patterns on the exposed face are made in a conventional tile press. Prior to filling the mold with the ceramic mixture a thin elastomeric insert the same size as the bottom die and having raised portions of a desired pattern is placed in the mold with the raised portions facing upward. The mold is then filled with the mixture and the mixture is pressed against the elastomeric insert. The pressed tile-insert composite is then ejected in a conventional manner and in sliding the composite off of the bottom die the insert protects the pressed tile from any damage that could be caused by the sliding movement. The insert is removed from the pressed tile and the latter is trimmed, dried, glazed, and fired.

3,627,862
TREATMENT OF METAL POWDER

De Witt Henry West, Port Eynon, Swansea; Alexander Bowen Simpson, Bryn Mill, Swansea; Ross Lowndes Simms, Swansea, and Reginald David Smith, Gorseinon, all of Wales, assignors to The International Nickel Company, Inc., New York, N.Y.

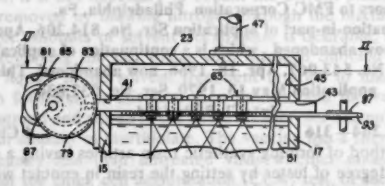
Filed May 15, 1969, Ser. No. 825,054
Claims priority, application Great Britain, May 20, 1968, 23,927/68
Int. Cl. B22f *1/00*
U.S. Cl. 264—71 7 Claims

Mixtures of at least two finely divided soft metal powders, e.g., nickel, cobalt, iron and copper powders, are agglomerated by ball milling the powders in a vibratory mill at temperatures between about 40° C. and 200° C. and in a nonoxidizing atmosphere.

3,627,863
METHOD FOR CONTINUOUSLY EXTRUDING NETLIKE STRUCTURES

Theodore H. Fairbanks, West Chester, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed May 16, 1969, Ser. No. 825,210
Int. Cl. D04b *25/00*; D01d *5/18*
U.S. Cl. 264—103 7 Claims

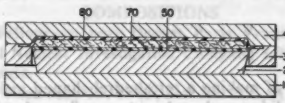


Method of making a netlike structure of woven or braided construction wherein a series of streams, extruded along each of the opposite sides of a common plane, are transferred to and from respective opposite sides of the common plane alternately with relative movement of the two series of streams in directions substantially parallel to the common plane.

3,627,864
METHOD OF MOLDING AN ARTICLE

Jason G. Doubleday, Hampden, Mass., assignor to Melsur Corporation, Brattleboro, Vt.

Continuation-in-part of application Ser. No. 388,126, Aug. 7, 1964, now abandoned. This application Oct. 17, 1969, Ser. No. 867,185
Int. Cl. B29j *5/00*
U.S. Cl. 264—112 1 Claim

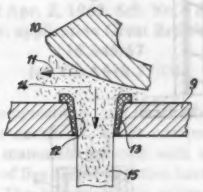


A one-operation process for molding a homogeneous article in the form of a core completely covered by an outer protective sheeting which includes the steps of: positioning a first covering thermosetting resin film in the mold below a loading ring, charging a molding material of wood flour and resin into the loading ring and over the first covering film, positioning a second covering thermosetting resin film in the mold and over the charge with the edges thereof extending outwardly of the mold cavity, the first and second covering films unitarily and uniformly surrounding the charge of molding material as an outer protective skin married together at the common joint line adjacent the mold cavity in a core-encompassing manner and married to the core by the application of heat and pressure.

3,627,865
METHOD AND APPARATUS FOR PRODUCING MINERAL AGGLOMERATES

Paul Wittwer, Paris; Henri F. Chabaglian, Maisons Laffitte, both of France, and Horst Ritzmann, Neubeckum, Germany, assignors to Polysius A.G., Neubeckum, Germany

Filed Mar. 27, 1969, Ser. No. 811,104
Claims priority, application France, Apr. 1, 1968, 146695
Int. Cl. B01j *2/20*
U.S. Cl. 264—118 2 Claims



The raw material for use in a metallurgical process is prepared in the form of agglomerates by mechanically pulverizing at least a part of a raw mineral to produce a powder having a specific surface between 2,000 and 5,000 square cm. per gram, the largest particles of which are smaller than 500 microns. The powder is mixed with a liquid to produce a paste, and the paste is extruded through perforations to produce rods having a diameter of 5 to 40 mm., the rods being separated into pellets having a length between 0.7 and 2.5 times their diameter. The pellets are rolled to round off their rough edges and then are preheated at a temperature between 500° and 850° C. to condition them for use in the metallurgical process.

3,627,866

METHOD OF MAKING SHAPED ARTICLES

Awbrey Charles Laws, Cambridge, Mass., assignor to Synectics Development Corporation, Cambridge, Mass.

Filed June 9, 1969, Ser. No. 790,119
Int. Cl. B26d *3/00*; B29c *17/14*; B29d *27/06*
U.S. Cl. 264—148 6 Claims

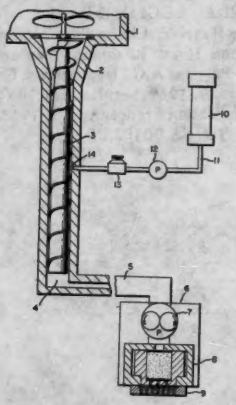
A method of making a tetrahedral-shaped article from an elongated solid member having equilateral triangular or square cross section in which the elongated polyhedral shape is positioned with two of its edges lying in a plane on one side of the third edge of the triangular cross section. The shape is cut in a plane normal to the first plane through each of the edges and at an angle of 45° to all of the edges. Thereafter the polyhedral shape is rotated so that one of the edges in the plane moves from the plane and the third edge moves into the plane and the cutting process is repeated.

3,627,867

PROCESS OF MELT-SPINNING HIGH-MOLECULAR-WEIGHT ETHYLENE TEREPHTHALATE POLYMER

Eckhard Christian August Schwarz, Grifton, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 5, 1968, Ser. No. 757,680
Int. Cl. D01f *1/00*; C08g *17/00*
U.S. Cl. 264—211 5 Claims



A process and apparatus are disclosed for melt-spinning high-molecular-weight polyethylene terephthalate into high-performance fibers under conditions which reduce the normally high viscosity of such polyester. Ethylene oxide or other low-boiling oxirane compound is injected under pressure into molten polyester before it is fed to the metering pump of the melt-spinning machine. Illustrations show that injection of amounts as small as 0.3 percent provide a substantial reduction in filter pack pressure. The fibers are characterized by low free-carboxyl content and freedom from voids which might be expected from injection of the volatile material.

3,627,868

METHOD OF PRODUCING NIBS FOR WRITING INSTRUMENTS

Takaji Funahashi, No. 1, 2-chome, Kitatkajo-machi, Nishi-ku, Nagoya-shi, Aichi-ken, Japan

Filed May 21, 1969, Ser. No. 826,615
Claims priority, application Japan, May 24, 1968, 43/42795
Int. Cl. B29d *9/00*
U.S. Cl. 264—250 8 Claims

This invention is to produce, on a mass-production scale and at low cost, the nibs or pen points for various types of writing pens which permit smooth writing performance with always constant size for a long period of use.

3,627,869

METHOD OF PRODUCING A LAMINATED POLYETHYLENE-POLYPROPYLENE ARTICLE

Roger J. Walton, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Oct. 6, 1967, Ser. No. 673,284
Int. Cl. B29c *5/04*
U.S. Cl. 264—255 6 Claims

At least one of a homopolymer or copolymer of ethylene and another olefin such as propylene, butene-1 and higher up to about eight carbon atoms and a copolymer of propylene and ethylene are laminated together, for example, by rotational molding. The ethylene homopolymer and/or the ethylene copolymer is first laid down upon the mold surface whereupon the propylene-ethylene copolymer is laid as a second layer. When an ethylene copolymer is used, the comonomer is present in minor amount, for example, usually not over about 7 percent. The ethylene in the propylene copolymer usually will not exceed about 20 percent. Smaller than the percentages given are ordinarily quite satisfactory. Multiwalled articles produced with the laminates of invention exhibit good layer cohesiveness, high environmental stress cracking resistance and high impact resistance.

3,627,870

METHOD OF FORMING SYNTHETIC RESIN DELUSTERED SURFACES

Frank E. Carevic, West Chester; John A. Milhalik, Swathmore, and Alfred H. Stewart, Jr., Media, all of Pa., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of application Ser. No. 814,206, Apr. 7, 1969, now abandoned , which is a continuation of application Ser. No. 543,067, Apr. 18, 1966, now abandoned. This application May 13, 1970, Ser. No. 037,036
Int. Cl. B29c *1/04*
U.S. Cl. 264—316 4 Claims

A method of forming synthetic resin articles having a controlled degree of luster by setting the resin in contact with a nonfibrous cellulosic release sheet containing an anchoring agent and finely divided water-insoluble particles of β-1,4 glucan or a water-insoluble derivative thereof specific particle sizes.

3,627,871

THERAPEUTIC COMPOSITIONS FOR TOPICAL APPLICATION

Michael John Groves, and John Neville Hague, both of Nottingham, England, assignors to Boots Pure Drug Company Limited, Nottingham, England

Filed Apr. 22, 1968, Ser. No. 723,245
Claims priority, application Great Britain, Apr. 27, 1967, 19,480/67
Int. Cl. A61k *17/16*
U.S. Cl. 424—78 2 Claims

Therapeutic film-forming compositions suitable for topical application which contain medicaments and which dry when applied to the skin to give a flexible, nontacky adherent, substantially water-vapor impermeable film capable of releasing said medicaments to the underlying skin. The preferred film-forming composition comprises an aqueous emulsion of a polyvinylidene chloride and a medicament such as an anti-inflammatory steroid.

3,627,872

ORAL TREATMENT OF HYPER-CHOLESTEREMIA IN MAMMALS AND BIRDS WITH ETHER-TYPE ANION EXCHANGERS OF POLYSACCHARIDES

Thomas M. Parkinson, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of application Ser. No. 451,978, Apr. 29, 1965, now abandoned. This application Apr. 8, 1968, Ser. No. 719,670
Int. Cl. A61k *27/00*
U.S. Cl. 424—79 6 Claims

Processes of orally treating hypercholesteremia in mammals and birds. Ether-type anion exchangers based on polysaccharides and cross-linked polysaccharides are orally administered to hypercholesteremic mammals such as humans and animals, such as dogs; and birds, such as cockerels, in the amelioration and control of hypercholesteremic affections.

3,627,873

INFLUENZA VACCINE WITH REDUCED PYROGENICITY

Arden Wesley Moyer, 138 Fremont Ave., Park Ridge, N.J.

Filed June 9, 1967, Ser. No. 644,812
Int. Cl. A61k *27/00*
U.S. Cl. 424—89 3 Claims

An inactivated influenza virus vaccine is produced by treating the virus before or after inactivation with formalin with a small amount of an organic solvent selected from the group consisting of dilower alkyl ethers and lower alkyl esters of lower fatty acids. The amount was usually less than 2 volumes of the solvent, for a short time, not significantly in excess of 4 hours and preferably from 15 minutes to 2 hours, the shorter times being used when the volume of solvent is in excess of 1. Preferred solvents are diethyl ether and methyl acetate.

In the case of the smaller amounts of solvent, such as for example one-eighth the volume of the aqueous virus concentrate, it is not necessary to decant the solvent phase; it may be removed by blowing nitrogen through the mixture. With larger amounts of solvent decantation is desirable, followed by removing the last traces with nitrogen bubbled through the liquid. If the solvent treatment is prior to inactivation with formalin, inactivation then follows, and the vaccine is preserved and stored in the usual manner, for example with a small amount of merthiolate. The vaccine has a titer not significantly less than untreated virus whether measured by either the chick cell agglutination (CCA) test, or the hemagglutinin (HA) test. The pyrogenicity is, however, reduced to a very low point. Rabbit tests show temperature rises of less than 0.4° C. as against temperature rises of 1° C. or somewhat more in untreated vaccines.

3,627,874

VACCINE PREPARATION

Philip P. Vella, Willingboro, N.J., and Roy A. Machlowitz, Glenside, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed July 16, 1969, Ser. No. 842,362
Int. Cl. A61k *27/00*
U.S. Cl. 424—88 2 Claims

A nonanaphylactic PPLO vaccine is prepared by propagation of the organism at controlled pH in a medium containing fractionated calf serum. The fractionated calf serum is prepared by precipitation of proteinaceous fractions from whole calf serum containing anaphylactic and growth inhibiting factors by addition of salts or by heating.

3,627,875

ANTIPYRETIC AND INFLAMMATION COMBATTING COMPOSITIONS

Christiane Fellonneau, born Drouet, Paris, France, assignor to Industrial Nuclear Investigation Company Limited, Vaduz, Liechtenstein

Filed May 15, 1963, Ser. No. 255,117
Claims priority, application Switzerland, June 12, 1962, 6993/62
Int. Cl. A61k *27/00*
U.S. Cl. 424—94 3 Claims

Compositions having antipyretic and inflammation-reducing activity which employ enzymes.

3,627,876

METHOD OF RELIEVING PAIN UTILIZING RIBONUCLEASE

Jean Paul Choay, Neuilly-sur-Seine, France, assignor to Laboratoire Choay, Paris, France

Filed Mar. 15, 1968, Ser. No. 713,322
Claims priority, application France, Mar. 16, 1967, 99032
Int. Cl. A61k *19/00*
U.S. Cl. 424—94 17 Claims

Painful pathological conditions which are totally free of inflammation can be relieved by the application of an effective quantity of ribonuclease as analgetic agent.

3,627,877

TREATMENT OF SCHISTOSOMIASIS IN MAMMALS

Hendrik Ottens, Delft, Netherlands, assignor to Koninklijke Nederlandsche Gist-En Spiritusfabriek N.V.

Filed Apr. 2, 1968, Ser. No. 718,258
Claims priority, application Great Britain, Apr. 4, 1967, 15,345/67
Int. Cl. A61k *27/00*
U.S. Cl. 424—93 17 Claims

Therapeutic compositions and method for treatment of schistosomiasis in mammals which comprises intravenously administering to mammals infected with schistosomiasis an effective amount of live Gram-negative bacteria suspended in a suitable liquid. The invention also relates to a process for the preparation of said therapeutic compositions.

3,627,878

HERBIVORE REPELLENT AND METHOD

Gerard F. Linsner, Chicago, Ill., assignor to Wilson Pharmaceutical & Chemical Corporation

Filed Nov. 6, 1967, Ser. No. 681,018
Int. Cl. A61k *17/00*
U.S. Cl. 424—101 11 Claims

A repellent for animals such as deer and rabbits which is prepared by fermentation of animal blood. Blood fermented using both aerobic and anaerobic bacteria is used in liquid or powder forms in an area to be protected from the herbivores.

3,627,879

METHOD FOR TREATING HYPERCHOLESTEROLEMIA

Harry W. Gordon, Bronx, N.Y., and Carl P. Schaffner, Trenton, N.J., assignors to Julius Schmid, Inc., New York, N.Y.

Filed Mar. 31, 1967, Ser. No. 627,313
Int. Cl. H61k *21/00*
U.S. Cl. 424—117 9 Claims

The method of orally administering compositions for treating hypercholesterolemia is described herein, the compositions containing an effective dose of a heptaene polyenic macrolide.

3,627,880

ANTIBIOTIC COPIAMYCIN

Tadashi Arai, No. 50-6 6-chome, Nogata-machi, Nakano-ku, Tokyo, Japan, and Shyuko Kuroda, 727 University Ave. S.E., Minneapolis, Minn.

Filed Aug. 25, 1965, Ser. No. 482,464
Claims priority, application Japan, Aug. 31, 1964, 39/48603
Int. Cl. A61k *21/00*
U.S. Cl. 424—120 5 Claims

Copiamycin is a new antifungal agent and is produced by the cultivation of Streptomyces hygroscopicus var. crystallogenes. Copiamycin inhibits the growth of certain fungi.

3,627,881

METHOD FOR PRODUCING ANTIBIOTIC B-2847

Motoo Shibata, Toyonaka; Toru Hasegawa, Osaka; Eiji Higashide, Takarazuka; Toyokazu Kishi, Nara; Hideo Yamana, Osaka; Setsuo Harada; Masayuki Muroi, both of Suita; Mitsuko Asai, Takatsuki, and Komei Mizuno, Settsu, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Feb. 26, 1968, Ser. No. 708,319
Claims priority, application Japan, Feb. 25, 1967, 42/11976
Int. Cl. A61k *21/00*
U.S. Cl. 424—121 3 Claims

Antibiotically active compounds which have strong antimicrobial activity against some common bacteria and acid-fast bacteria, and are useful inter alia in the treatment of *Staphylococcus aureus* topical infections, are obtained by culturing *Streptomyces tolypophorus* and mutants and variants thereof in a nutrient medium containing assimilable carbon sources and digestible nitrogen sources.

3,627,882

ANTIBIOTIC DERMADIN AND A PROCESS FOR PRODUCING THE SAME

John H. Coats, Kalamazoo; Curtis E. Meyer, Galesburg, and Thomas R. Pyke, Prairie Rond Township, Kalamazoo County, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of application Ser. No. 418,811, Dec. 16, 1964, now abandoned. This application Mar. 12, 1968, Ser. No. 712,484
Int. Cl. A61k *21/00*
U.S. Cl. 424—121 8 Claims

New antibiotic dermadin and a microbiological process for the production thereof using the micro-organism *Trichoderma viride*. Dermadin is an antibacterial and can be used in paper mill systems to inhibit the growth of *Aerobacter aerogenes* which is known to produce slime in such system.

3,627,883

ANTIBIOTIC X206 FOR TREATING COCCIDIOSIS

Marvin Gorman, and Robert L. Hamill, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed May 3, 1968, Ser. No. 726,575
Int. Cl. A61k *21/00*
U.S. Cl. 424—122 1 Claim

Methods and compositions for controlling coccidiosis employing Antibiotic X206, its alkali metal, alkaline earth, and basic nitrogen salts as the active anticoccidiosis agent.

3,627,884

CONTROLLING BACTERIA WITH L-LYSINE-N-DODECYLESTER(L-LYSINE-N-TETRADECYLESTER AND ACID ADDITION SALTS THEREOF

Karl Vogler, Riehen, Switzerland, assignor to Hoffman-La Roche Inc., Nutley, N.J.

Continuation-in-part of application Ser. No. 777,502, Nov. 20, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 399,329, Sept. 25, 1964, now Patent No. 3,433,779. This application July 22, 1970, Ser. No. 057,361
Int. Cl. A61k *27/00*
U.S. Cl. 424—177 3 Claims

A method of inhibiting and controlling the growth of bacteria which comprises contacting said bacteria with an antibacterially effective amount of a long chain aliphatic ester selected from the group consisting of L-lysine-n-dodecylester L-lysine-n-tetradecylester and acid addition salts thereof is described.

3,627,885

STABILIZED ANTIBIOTIC COMPOSITIONS FOR ANIMAL FEEDING

Jacques Rondelet; Willy Lhoest, both of Rixensart, and Bernard Boon, Genval, all of Belgium, assignors to Recherche Et Industrie Therapeutiques, R.I.T., Genval, Belgium

Filed July 18, 1968, Ser. No. 745,708
Int. Cl. A61k *21/00*
U.S. Cl. 424—177 12 Claims

Stabilized antibiotic compositions for animal feeding are prepared by granulation of the antibiotic compound with a compatible silicon oxide or aluminum, calcium or magnesium oxide, carbonate or silicate showing defined specific surface—, water-sorption potency—and water solubility—characteristics. The granulation is carried out in the presence of a binder and, optionally, in the presence of a disintegrator. The granules are adequately calibrated before being dispersed into a suitable feed or premix substrate.

3,627,886

METHODS OF SOLUBILIZING COUMERMYCIN EMPLOYING UREA, DIMETHYLACETAMIDE OR MIXTURES THEREOF

Harold Leon Newmark, Maplewood, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Apr. 15, 1968, Ser. No. 721,154
Int. Cl. A61k *21/00*
U.S. Cl. 424—181 2 Claims

A therapeutic composition is described which comprises a mixture of (1) coumermycin and (2) (a) dimethylacetamide, (b) urea or (c) a mixture of dimethylacetamide and urea.

The composition can be formulated into suitable dosage forms for oral administration and, when so administered, satisfactory blood levels are achieved at relatively low dosages.

3,627,887

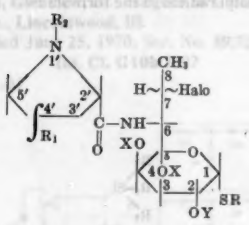
PROCESS FOR TREATING MALARIA

Charles Lewis, Parchment, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of application Ser. No. 651,135, July 5, 1967, now abandoned. This application Oct. 17, 1969, Ser. No. 867,418
Int. Cl. A61k *21/00*
U.S. Cl. 424—181 16 Claims

A process for treating malaria by the systemic administra-

tion to a subject hosting a malarial parasite of a compound of the formula:



Formula 1

where Halo is chlorine or bromine, R is an alkyl radical of from one to four carbon atoms inclusive, R_1 is an alkyl radical of from two to eight carbon atoms, inclusive, R_2 is hydrogen or alkyl radical of from one to eight carbon atoms, inclusive, X is hydrogen or trimethylsilyl, and Y is hydrogen, trimethylsilyl, phosphate or hydrocarbon acyl radical of up to 18 carbon atoms and provided that when Y is phosphate or acyl then X is hydrogen.

3,627,888

METHOD FOR OBTAINING CASCAROSIDES FROM CASCARA BARK

Ralph Salkin, Kinnelon, N.J., assignor to Corn Products Company

Filed Sept. 3, 1968, Ser. No. 757,100
Int. Cl. A61k *27/14*
U.S. Cl. 424—195 **1 Claim**

Covers a method for obtaining cathartic cascarosides from a cascara bark. Essential steps include adding a methanol extract of said bark to hot isopropyl alcohol, concentrating the solids content of said resultant solvent mixture, cooling said mixture and removing the desired cascaroside solids from the mother liquor.

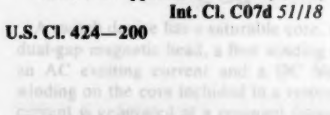
3,627,889

2-ACYLIMINO-1,3-DIAZACYCLOALKANES

Robert Armistead Lucas, Mendham, and Herbert Morton Blatter, Summit, both of N.J., assignors to Ciba Corporation, Summit, N.J.

Continuation-in-part of application Ser. No. 839,704, July 7, 1969. This application Dec. 11, 1969, Ser. No. 884,322
Int. Cl. C07d *51/18*
U.S. Cl. 424—200 **3 Claims**

1-R_1-2-trimethoxybenzoylimino;1,3-diazacycloalkanes, e.g. those of the formula



R_1=aliphatic or cycloaliphatic radical
R_2=H, alkyl or alkanoyl
n=2-4

or salts thereof exhibit hypnotic effects.

3,627,890

COMPOSITIONS AND METHODS OF USING DITHIOBIURET COMPOUNDS FOR REPELLING BIRDS, RODENTS, LEPORINE ANIMALS AND RUMINANTS

Gunther Hermann, Leverkusen, Germany; Peter Hoffmann, Hollywood, Calif.; Friedrich-Karl Rosendahl, Leverkusen, Germany, and Ivar Ugi, Santa Monica, Calif., assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 16, 1969, Ser. No. 825,446
Claims priority, application Germany, May 10, 1968, P 17 67 534.2
Int. Cl. A01n *9/00, 9/22*
U.S. Cl. 424—249 **12 Claims**

Compositions and methods of using certain dithiobiuret derivatives, some of which are known, which possess bird-, rodent-, leporine animal- and ruminant-repellent properties, and which may be produced by conventional methods.

3,627,891

USE OF PYRIMIDYLTHIURONIUM SALTS AS FUNGICIDES

Patrick R. Driscoll, Spotswood, N.J., assignor to Mobil Oil Corporation

Filed Oct. 17, 1969, Ser. No. 867,355
Int. Cl. A01n *9/00, 9/22*
U.S. Cl. 424—251 **8 Claims**

Certain pyrimidylthiuronium halide salts substituted in the 2-position with the thiuronium halide substituent form a new class of fungicides. They are highly effective as soil fungicides against Fusarium oxysporium, Pythium debaryanum, Rhizoctonia solani, and Sclerotium rolfsii.

3,627,892

GROWTH RATE OF ANIMALS WITH A THIOURACIL-CARBOXYLIC ACID

Hermann Moor, Binningen, Switzerland, assignor to Chemoforma A.G., Muenchenstein, Basel-Landschaft, Switzerland

Filed Apr. 18, 1968, Ser. No. 722,182
Claims priority, application Great Britain, Apr. 19, 1967, 18,101/67
Int. Cl. A61k *27/00*
U.S. Cl. 424—251 **3 Claims**

A method of improving the growth rate of pigs, poultry, fowl, and fur-bearing animals, comprising orally administering to these animals 2-thiouracil-4-carboxylic acid or a nontoxic salt or lower alkyl ester thereof; or this acid, salt or ester together with either methionine or uracil-4-carboxylic acid or a nontoxic salt or lower alkyl ester thereof.

3,627,893

LAXATIVE COMPOSITIONS CONTAINING AN ACID ADDITION SALT OF BIS-(4-HYDROXY-PHENYL)-(QUINOLYL-2)-METHANE

Ernst Seeger, Biberach/Riss, Germany, assignor to Boehringer Indelheim G.m.b.H., Ingelheim am Rhine, Germany

Continuation-in-part of application Ser. No. 608,500, Jan. 11, 1967. This application Jan. 2, 1970, Ser. No. 000,465
Int. Cl. A61k *27/00*
U.S. Cl. 424—258 **2 Claims**

Laxative compositions containing an acid addition salt of bis-(4-hydroxy-phenyl)-(quinolyl-2)-methane as the active ingredient, and a method of inducing bowel movements therewith in warm-blooded animals.

3,627,894

PHARMACEUTICAL COMPOSITIONS COMPRISING 72-METHYL ESTRONE AND METHODS FOR USING SAME

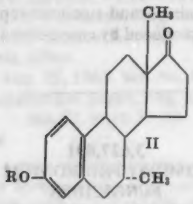
John C. Babcock, and J. Allan Campbell, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of application Ser. No. 114,621, June 5, 1961, now Patent No. 3,341,557, Continuation-in-part of application Ser. No. 69,557, Nov. 6, 1960, now abandoned. This application Sept. 8, 1967, Ser. No. 666,488

Int. Cl. C07c *169/20*

U.S. Cl. 424—243 4 Claims

This invention relates to novel steroid compounds and processes for their preparation: more particularly to those compounds embraced by the formula (11)



wherein R is selected from the group consisting of hydrogen, the acyl radical of a hydrocarbon carboxylic acid containing from one through twelve carbon atoms, an alkyl radical containing from one through eight carbon atoms, tetrahydrofuranyl, tetrahydropyranyl, 5-substituted tetrahydropyranyl, and a silyl radical of the formula

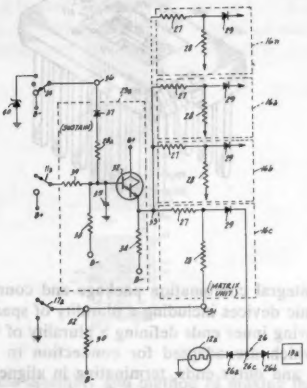
wherein R_1, R_2 and R_3 are selected from the group consisting of alkyl of one through six carbon atoms and phenyl.

3,627,895

MUSICAL ELECTRONIC INSTRUMENT KEYING WITH DIRECT CURRENT OF PLURAL MUSICAL EFFECTS

Peter T. Savon, Glenview, Ill., assignor to Chicago Musical Instrument Co., Lincolnwood, Ill.

Filed June 25, 1970, Ser. No. 49,725
Int. Cl. G10h *1/02*
U.S. Cl. 84—1.01 35 Claims



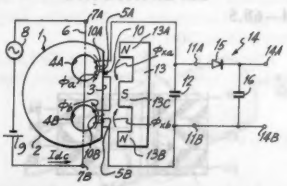
An electronic musical instrument is provided with a DC current switching circuit for controlling gates that are disposed between various sources of AC potential of audio signal frequency and conventional voicing circuits and signal-to-sound converting means. The switching circuit is under the control of key switches, voice tab switches, preset voice switches, percussion switches, and repeat switches respectively associated with appropriate circuitry to provide one composite DC keying circuit.

3,627,896

SWITCH DEVICE

Saburo Uemura, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 22, 1970, Ser. No. 30,775
Claims priority, application Japan, Apr. 24, 1969, 44/31671
Int. Cl. G01h *1/00*; H02k *29/00*
U.S. Cl. 84—1.01 9 Claims



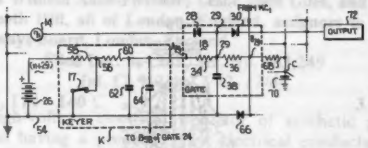
A switch device has a saturable core, as in a parametron or dual-gap magnetic head, a first winding on the core receiving an AC exciting current and a DC bias current, a second winding on the core included in a resonant circuit in which a current is generated at a resonant frequency half that of the AC exciting current only when the total direct magnetic flux influencing the second winding is within predetermined limits, and a source of additional direct magnetic flux, such as a magnet, is actuable, as by movement relative to the core, to selectively apply direct magnetic flux to the second winding for coaction with the direct magnetic flux resulting from the DC bias current in determining the total direct magnetic flux influencing the second winding, whereby the generation of current in the resonant circuit, and hence the appearance of a resulting output signal from the switch device, may be controlled by movement of the magnet relative to the core.

3,627,897

CHIFF CIRCUIT

Michael R. Harris, Hayward, Calif., assignor to D. H. Baldwin, Cincinnati, Ohio

Filed Apr. 6, 1970, Ser. No. 25,884
Int. Cl. G01h *1/04*
U.S. Cl. 84—1.24 32 Claims



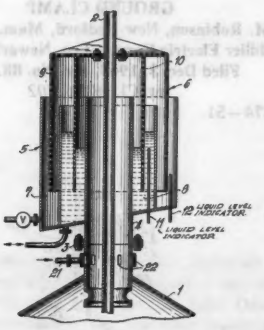
An electronic organ provides chiff tone components at the onset of each steady tone by making use of the same signal gate for the chiff component of a relatively low-pitched tone as the steady component of a relatively high-pitched tone and, additionally, utilizes each gate to control more than one "footage." Actuation of a key applies a steady gating voltage to one signal gate and a chiff pulse of gating voltage to another signal gate. For multiple footage operation, an electronic switch is arranged to be selectively keyed by plural key switches representing different footages. A footage selector switch selectively permits and prevents different footage key switches from keying the electronic switch. The signal gates and isolation circuitry between signal gates are disclosed in a variety of alternative embodiments.

3,627,898

SEALING CUP FOR ELECTROSTATIC PRECIPITATORS

Werner Ibach, Knapsack near Cologne, and Leopold Slawiczek, Hermulheim near Cologne, both of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack bei Cologne, Germany

Filed Aug. 25, 1969, Ser. No. 852,663
Claims priority, application Germany, Sept. 26, 1968, P 17 82 639.0
Int. Cl. B03c *3/34*; H01b *17/26*
U.S. Cl. 174—11 BH 10 Claims



Sealing cup centrally traversed by a conductor for use as a safeguard against the formation of overpressure and subpressure in electrical precipitation apparatus. The sealing cup substantially comprises a trough partially filled with a sealing liquid and having a plurality of annular chambers and a bell-

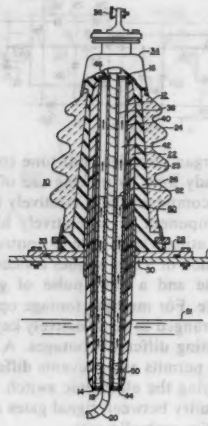
shaped member arranged to dip thereinto having a plurality of bell-shaped cylinders arranged so as to concentrically project into each of the annular chambers in the trough.

3,627,899

ELECTRICAL BUSHING ASSEMBLY WITH EVAPORATIVE HEAT PUMP DISPOSED BETWEEN INSULATION AND ELECTRICAL LEAD

Curtis L. Moore, Sharon, Pa., assignor to Westinghouse Electric Company, Pittsburgh, Pa.

Filed May 12, 1970, Ser. No. 36,600
Int. Cl. H01b *17/26, 17/54*
U.S. Cl. 174—15 BH **4 Claims**



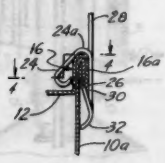
An electrical bushing assembly including a hollow electrically conductive member, an electrical lead disposed through the opening in the hollow electrically conductive member, and insulation surrounding the conductive member. The electrical conductive member defines a chamber having a volatile fluid disposed therein which is cycled between its liquid and gaseous phases by the natural temperature differential along the conductive member when the bushing is in service.

3,627,900

GROUND CLAMP

William M. Robinson, New Bedford, Mass., assignor to Cornell-Dubilier Electric Corporation, Newark, N.J.

Filed Dec. 8, 1969, Ser. No. 883,121
Int. Cl. H05k *5/02*
U.S. Cl. 174—51 **4 Claims**



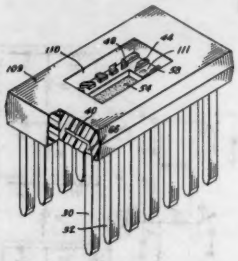
Connection is made to a metal container having a bead, by means of a resilient clamp that embraces the bead, and surface-penetrating tines, and a terminal part to which a wire connection may be made.

3,627,901

COMPOSITE ELECTRONIC DEVICE PACKAGE-CONNECTOR UNIT

Marvin B. Happ, Hingham, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 19, 1969, Ser. No. 886,614
Int. Cl. H05k *5/00*
U.S. Cl. 174—52 PE **29 Claims**



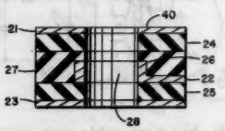
An integral combination package and connector unit for electronic devices including a plurality of spaced lead members having inner ends defining a plurality of terminal members, which are adapted for connection to the electronic device, and outer ends, terminating in aligned spaced relationship and joined with a plurality of male connector pins of a substantially greater thickness. The male connector pins depend from the outer ends of the lead members in aligned parallel relationship and are adapted to be connected in an electronic system. A nonconductive encapsulation material encapsulates the lead members and may encapsulate a portion of the male connector pins, although the ends thereof are exposed for connection to the electronic system. A cavity in the encapsulation material exposes the terminal members to permit connection of an electronic device to the terminal members, the cavity being adapted to receive a sealant plug to complete the unit.

3,627,902

INTERCONNECTIONS FOR MULTILAYER PRINTED CIRCUIT BOARDS

Steven C. Meyers, Burnsville, and Larry G. Bergman, Minneapolis, both of Minn., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Feb. 2, 1970, Ser. No. 7,656
Int. Cl. H05k *1/10*
U.S. Cl. 174—68.5 **6 Claims**



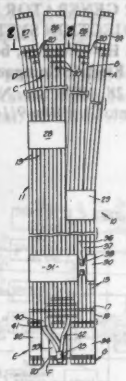
A reliable mechanical and electrical connection between interior conductive layers and exterior conductive layers of a multilayer printed circuit board is provided. Shoulders are formed on the internal conductive layers at the location where connection is desired. A hole is then drilled through the assembly, passing through the shoulder. The wall of the hole is then electroformed with a conductive metal which makes connection at the formed shoulder. The added thickness of the shoulder combined with the pad area on the interior conductive layer provides a relatively large area and a more reliable interconnection.

3,627,903

WOVEN CABLE HARNESS ASSEMBLY AND METHOD OF MAKING SAME

Walter A. Plummer, Sherman Oaks, Calif., assignor to Southern Weaving Company, Greenville, S.C.

Filed Sept. 28, 1970, Ser. No. 76,096
Int. Cl. H01b 7/08
U.S. Cl. 174—72 A 9 Claims



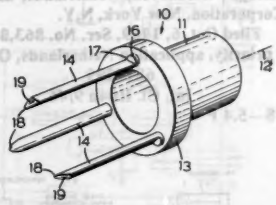
A wire harness assembly and method of making the same using one or more woven cables and groups of conductors along selected lengths thereof separated therefrom to provide branchout groups of conductors. A hot blade passed between a selective pair of conductors is effective to simultaneously sever the weft filaments of the woven cable and to bond the severed ends of the filaments together and/or to the plastic sheath of adjacent conductors. Cross connection between one or more conductors of different groups is accomplished by severing a selected conductor in each group at a point in the main trunk and interconnecting appropriate ones of the severed ends.

3,627,904

BUSHING FOR INCORPORATION IN ELECTRICAL CONNECTOR ASSEMBLY

John D. Milne, c/o MM Plastics (Mfg) Company, 62 Shaft Road, Rexdale, Ontario, Canada

Filed Apr. 9, 1970, Ser. No. 26,928
Int. Cl. H02g 15/00
U.S. Cl. 174—83 7 Claims



An electrically insulating bushing presenting one or more prongs which so project that, with the bushing incorporated in an electrical connector assembly in which an end portion of an electric cable is connected to, for example, a junction box, the bushing being disposed within the connector with a cylindrical portion of the bushing disposed between the electrical conductors and the outer casing of the electric cable, the ends of the prongs project from the connector to be visible externally of the connector assembly, either with or without the removal of an element of the connector. Thus, although removal of an element of the connector may be required in order to permit inspection of the connector assembly to ensure that a bushing has been installed therein, such inspection can be performed without requiring dismantling of the connector assembly. The projecting ends of the prongs present informational indicia concerning, for example, the size of the bushing, each prong being of segmental form in cross section with the arcuate face thereof facing towards, and the flat face thereof facing away from, the longitudinal axis of the bushing.

3,627,905

HIGH-VOLTAGE ELECTRICAL INSULATOR HAVING A PREDETERMINED SURFACE CONDUCTANCE

Marcus William Astle-Fletcher; Leslie John Giles, and Joseph Kenneth Hill, all of London, England, assignors to British Railways Board, London, England

Filed Dec. 8, 1969, Ser. No. 883,249
Int. Cl. H01b 17/42, 17/64
U.S. Cl. 174—140 C 3 Claims

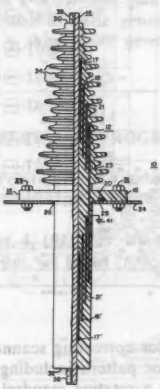
A high-voltage electrical insulator of synthetic plastics material having a predetermined electrical conductance to inhibit discharges of the order of 7 milliamperes and less but to permit larger current discharges. Preferably said conductance is provided by surface conductance and preferably it is discharges of 5 milliamperes and less which are inhibited.

3,627,906

ELECTRICAL CONDENSER BUSHING ASSEMBLY

Robert A. Kurz, West Middlesex, and Jacob Chottiner, Mckeesport, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 24, 1970, Ser. No. 75,128
Int. Cl. H01b 17/28
U.S. Cl. 174—143 6 Claims



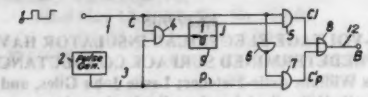
An electrical bushing assembly of the condenser type, including an insulating body member formed of cast solid insulation, an electrical conductor, and at least One tabular capacitor plate embedded in the cast solid insulation of the body member, in spaced relation about the electrical conductor. The tubular capacitor plate is formed of a plurality of turns of electrically conductive material, with the turns being axially spaced in a predetermined pattern to provide openings in the wall of the tubular capacitor plate, through which the solid insulation of the insulating body member extends.

3,627,907

BINARY PULSE TRAIN TRANSMISSION SYSTEMS

Hans Diggelmann, Muri, and Rudolf Kuhne, Berne, both of Switzerland, assignors to Hasler AG, Berne, Switzerland

Filed Oct. 10, 1969, Ser. No. 875,172
Claims priority, application Switzerland, Nov. 15, 1968, 16980/68
Int. Cl. H04l 17/00
U.S. Cl. 178—2 B 3 Claims



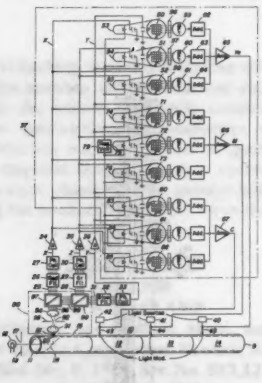
A system for the transmission by a transmitter of a first synchronous binary pulse train having means for converting said pulse train into a second synchronous pulse train and having means for transmitting said second pulse train to a receiver adapted to receive said second pulse train and to convert it into a pulse train corresponding to the first mentioned pulse train.

3,627,908

HIGH-SPEED COLOR CORRECTING SCANNER FOR MAKING COLOR PRINTING PLATES

John L. Dailey, Pittsford, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Dec. 23, 1969, Ser. No. 887,636
Int. Cl. H04n 1/46
U.S. Cl. 178—5.2 A 7 Claims



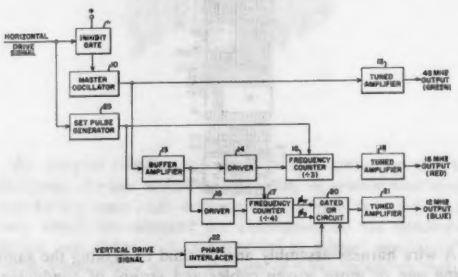
A high-speed color correcting scanner, comprising a mirror and a multicolor pattern including red, green and blue colors mounted on a rotating mandrel for illuminating successively different spots of the pattern to reflect multicolor light therefrom; three discrete light filter and photocell means for translating the reflected red, green and blue light into three corresponding voltages varying in magnitude in response to the varying intensity of the respective latter light; a plurality of photosensitive printing plates mounted on the rotating mandrel; a plurality of sources of actinic light; a plurality of light modulators connected to the light sources; a transform analog computer embodying cathode ray tubes and light transparency encoded films activated by light from the latter tubes to generate other voltages for simultaneously actuating the light modulators to direct corresponding amounts of actinic light from the respective light sources onto the light-sensitive printing plates to image precisely the multicolor pattern thereon; and on optical device including two light-beam splitters and interposed between the multicolor pattern and the filter means for splitting the reflected multicolor light into three discrete light beams for voltage translation by the filter and photocell means into the three corresponding voltages; the mirror, mandrel, light sources, modulators and optical device moving in synchronism.

3,627,909

COHERENT COLOR GENERATOR FOR LIGHT VALVE PROJECTION SYSTEM

Thomas P. L. Liu, and Ho-Chol Lee, both of Liverpool, N.Y., assignors to General Electric Company

Filed Jan. 28, 1970, Ser. No. 6,446
Int. Cl. H04n 9/16
U.S. Cl. 178—5.4 B D 9 Claims



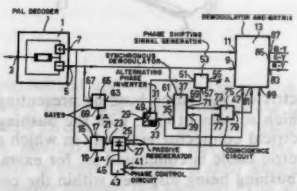
Radio frequency carrier signals to establish optical diffraction gratings of predetermined spatial frequency for each primary color respectively employed in a light valve are generated by a gated master oscillator and frequency divider apparatus. The carrier frequency ratios are constant, and all oscillations begin simultaneously from a zero crossing, with full amplitude oscillation occurring immediately at the outset. Phase alternation at vertical field rate is introduced in one of the carrier signals to alternately establish diffraction gratings oriented in the same direction and having identical spatial frequency but opposite spatial phase in order to minimize optical beat frequencies between the first and second diffraction gratings.

3,627,910

IDENTIFICATION CIRCUIT FOR PAL COLOR TELEVISION RECEIVER

Peter Johannes Hubertus Janssen, and Wouter Smeulers, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 6, 1969, Ser. No. 863,803
Claims priority, application Netherlands, Oct. 5, 1968, 6814299
Int. Cl. H04n 9/46
U.S. Cl. 178—5.4 P 10 Claims



An identification circuit for a PAL television signal has a PAL decoder having an alternating phase output. A synchronous demodulator is coupled to the decoder output

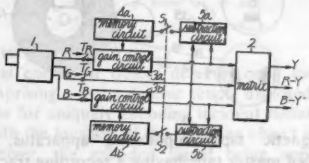
and to a passive regenerator. A phase control circuit is coupled to the demodulator and to the regenerator. An alternating phase inverter is coupled to a demodulator input and is controlled by a phase shift generator coupled to the demodulator.

3,627,911

WHITE BALANCE CONTROL SYSTEM

Yasuharu Kubota, Kanagawa-ken, and Takashi Shiono, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 17, 1970, Ser. No. 12,070
Claims priority, application Japan, Jan. 17, 1970, 44/13409
Int. Cl. H04n *9/48*
U.S. Cl. 178—5.4 R **8 Claims**



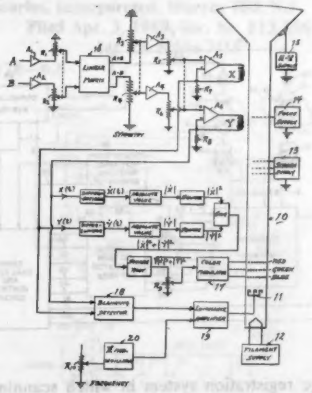
A white balance control system which has two amplifiers for red and blue video signals, two memory circuits for selecting the gains of the amplifiers in response to signals applied thereto, and two comparator circuits for comparing a green video signal with the red and blue video signals, respectively. The compared signals are respectively applied to the memory circuits selectively.

3,627,912

VISUAL DISPLAY OF COMPLEX COLOR TELEVISION SOUND WAVE SIGNALS

William E. Hearn, Atherton, Calif., assignor to Charles W. Kieser, San Francisco, Calif., a part interest

Filed Apr. 23, 1969, Ser. No. 818,666
Int. Cl. H04n *9/02*
U.S. Cl. 178—5.4 R **7 Claims**



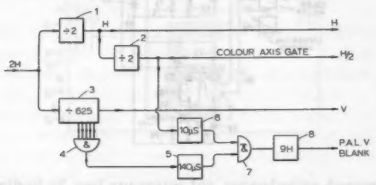
This disclosure involves apparatus and modifying circuits for use in conjunction with a conventional color cathode-ray tube to provide fanciful wide-band vector representations of the video signals by a pair of audio channels such, for example, as would be produced with a stereophonic recorded-signal source. The stereophonic signal source may be generated through microphones, phonograph and magnetic tape recordings, or from stereophonic broadcasts and is amplified and processed by wide-band linear circuitry whose effect is substantially independent of frequency and displayed in vector form on a color cathode-ray tube utilizing magnetic deflection. The effect of the apparatus is to produce highly detailed visual patterns of great regularity and beauty of form and color, revealing fine details inherent in the stereophonic representation of the complex, nonrecurrent wave forms produced by music or voice. No filters or frequency sensitive elements are used except as required to enhance the signal-to-noise ratio of the program material in which no timing signal, sweep signal, or raster representation is employed.

3,627,913

TELEVISION VERTICAL BLANKING PULSE GENERATORS

Richard John Godwin Ellis, Cambridge, England, assignor to Pye Limited

Filed Oct. 6, 1969, Ser. No. 864,033
Claims priority, application Great Britain, Oct. 10, 1968, 48,055/68
Int. Cl. H04n *9/44, 1/38*
U.S. Cl. 178—5.4 SY **8 Claims**



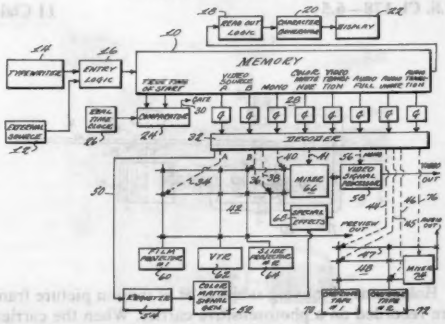
A vertical blanking pulse generator for a PAL television system features a frequency divider to produce a vertical synchronizing pulse from an input signal of twice the horizontal frequency. An AND gate decodes a pulse from the divider which leads the vertical sync pulse. A pair of frequency dividers produces a color axis gate pulse. Both of the above pulses are applied to pulse generators and then to a second AND gate. A third pulse generator produces the blanking pulse.

3,627,914

AUTOMATIC TELEVISION PROGRAM CONTROL SYSTEM

Kenneth P. Davies, Pointe Claire, Quebec, Canada, assignor to Central Dynamics, Ltd., Pointe Claire, Montreal, Quebec, Canada

Filed Sept. 4, 1969, Ser. No. 855,296
Int. Cl. H04n *7/00*
U.S. Cl. 178—5.8 **12 Claims**



In an automatic television programming control system, circuitry for (1) effecting the insertion of a matte or the like

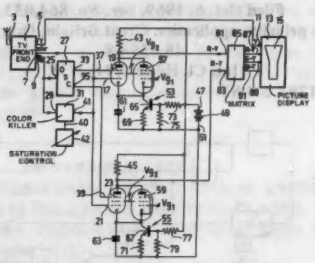
in a background picture, (2) providing for a transition (such as a dissolve or fade) from one audio source to another, and (3) effecting background audio such as music for a foreground audio signal.

3,627,915

COLOR DEMODULATOR WITH SHUNT COUPLED CURRENT TAKEOVER COLOR KILLER CIRCUIT

Alphonsus Maria Henricus Schellekens, and Antonius Hendrikus Hubertus Jozef Nillesen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 20, 1969, Ser. No. 826,241
Claims priority, application Netherlands, May 22, 1968, 6807207
Int. Cl. H04n *9/50, 9/48*
U.S. Cl. 178—5.4 SD **8 Claims**



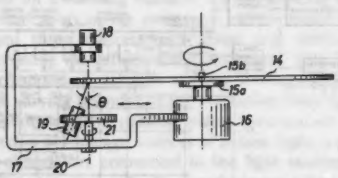
A color demodulator is in a series circuit having a constant current source and a supply voltage source. A current takeover circuit is parallel coupled to the demodulator. A color killer circuit cuts off the demodulator when no color burst is being received and therefore, the takeover circuit conducts all of the current from the current source to the load impedance. The direct current flowing through the load impedance then remains the same when either a monochrome or a color signal is being processed.

3,627,916

APPARATUS FOR RECORDING AND REPRODUCING HOLOGRAMS OF MOVING SUBJECTS

Fritz Bestenreiner, Am Dullanger 5, Grunwald near Munich Heinrich Nassenstein, Hegelstrasse 6, and Gunther Langner, Carl-Rumpff-Strasse 28, both of Leverkusen, all of Germany

Division of Ser. No. 669,235, Sept. 20, 1967
Filed Oct. 3, 1969, Ser. No. 863,476
Claims priority, application Germany, Sept. 21, 1966, A 53 567
Int. Cl. H04n *9/54, 9/60*
U.S. Cl. 178—6.5 **11 Claims**



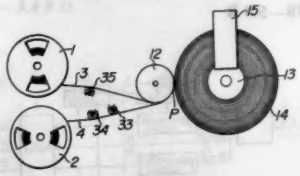
Holograms of moving subjects or of motion picture frames are recorded on a photosensitive carrier. When the carrier is moved with the holograms through coherent light, real images of the subject are formed which are reproduced for viewing.

3,627,917

MAGNETIC TAPE DUPLICATING APPARATUS WITH BULK TRANSFER AND SEPARATE DUPLICATION OF LONGITUDINAL TRACK

Hiroshi Sugaya, Suita-shi; Fukashi Kobayashi, Hirakata-shi; Mitsuaki Ono, and Kaoru Imanishi, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 3, 1969, Ser. No. 873,267
Claims priority, application Japan, Jan. 18, 1969, 44/4297; Nov. 12, 1968, 43/100157; Nov. 13, 1968, 43/100087; Jan. 30, 1969, 44/8815; Jan. 30. 1969, 44/8816
Int. Cl. G11b *5/86, 21/00;* **H04n** *5/78*
U.S. Cl. 178—6.6 A **9 Claims**



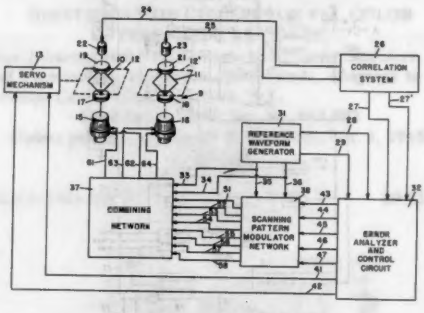
A magnetic tape duplicating apparatus, wherein a prerecorded master tape having a recording track containing a signal of a relatively short wavelength such as a video signal and a recording track containing a signal of a relatively long wavelength such as an audio signal, and a nonrecorded slave tape are wound onto a common reel with the magnetic surfaces thereof being disposed in close contact with each other. A transfer field is applied to the said two tapes to achieve duplication, and during the rewinding of the two tapes, duplication is again effected with respect to the recording track containing the said relatively long wavelength signal to thereby correct interlayer duplication of the said relatively long wavelength signal recording track occurring during the application of the said transfer field.

3,627,918

MULTIPLE IMAGE REGISTRATION SYSTEM

Donald Clark Redpath, Winchester, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Oct. 30, 1969, Ser. No. 872,621
Int. Cl. H04n *3/28, 7/18;* **H01j** *39/12*
U.S. Cl. 178—6.8 **31 Claims**



An image registration system in which scanning patterns directed through a pair of images are used in a conventional manner to generate video signals that are in turn correlated and analyzed producing error signals. The error signals are then differentially modulated with reference signals producing modulated and complementary modulated error signals of opposite polarity. Selective combination of the reference and modulated error signals is accomplished with low noise and relatively simple circuitry and results in balanced pairs of deflection signals that induce equal but opposite transforma-

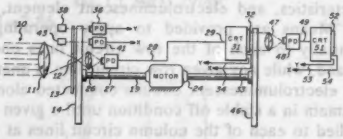
tions of the scanning patterns in senses tending to eliminate relative image distortion represented by the error signals.

3,627,919

CODED RETICLE CATHODE-RAY TUBE CORRELATOR APPARATUS

Irving Roth, Williston Park; Edward W. Stark, Garden City, and Solomon A. Zadoff, Jericho, all of N.Y., assignors to Sperry Rand Corporation

Filed Nov. 18, 1969, Ser. No. 877,719
Int. Cl. H04n 5/14
U.S. Cl. 178—6.8 **11 Claims**



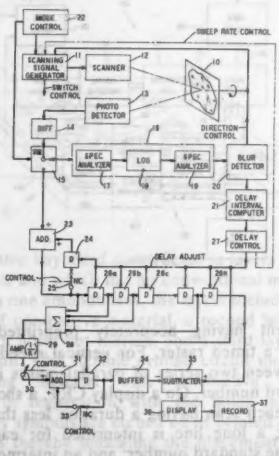
An optical correlator object detecting and locating apparatus comprising a first rotatable reticle disposed in an optical receiver for uniquely encoding incident radiation in accordance with the location of the radiating object in the field of the receiver, the encoded signal being applied to a cathode-ray tube wherein it modulates the intensity of an electron beam which is swept vertically at a rate corresponding to the rotational rate of the reticle and horizontally at a rate determined by the reticle code pattern. A second reticle identically coded and synchronously rotated with the first reticle is positioned adjacent the cathode-ray tube screen whereupon spatial image correlation occurs at the instant the second reticle is aligned with the code pattern on the screen causing maximum light (the autocorrelation signal) to be transmitted through the second reticle. A visual presentation of the location of the radiating object in the field is obtained by means of an additional cathode-ray tube which is swept similarly to the first cathode-ray tube and intensity modulated by the correlation signal.

3,627,920

RESTORATION OF DEGRADED PHOTOGRAPHIC IMAGES

Manfred R. Schroeder, Mountainside, and Man M. Sondhi, Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 3, 1969, Ser. No. 813,236
Int. Cl. H04n 7/18
U.S. Cl. 178—6.8 **11 Claims**



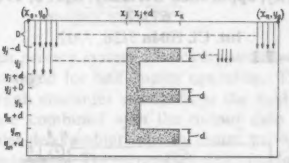
Photographs which are blurred, for example, by uniform motion of a camera relative to an image during exposure, are restored by identifying certain parameters of the blurring, e.g., direction and displacement, using the parameters to transform the distortion into an additive periodic component in the picture (blur), and by estimating (or identifying) and subtracting the periodic components from the picture. Two-dimensional spectral analysis, or the cepstrum technique, may be employed to identify the blur parameters, and a transversal filter arrangement, adjusted in accordance with parameter values is used to perform the estimation and subtraction.

3,627,921

METHOD OF, AND APPARATUS FOR, TRANSMITTING INFORMATION IN REPRODUCTION SYSTEMS USING ADAPTIVE SCANNING

David R. Weller, Bernardsville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 14, 1969, Ser. No. 790,974
Int. Cl. G06k 9/12; H04n 3/34, 7/12
U.S. Cl. 178—6.8 **21 Claims**



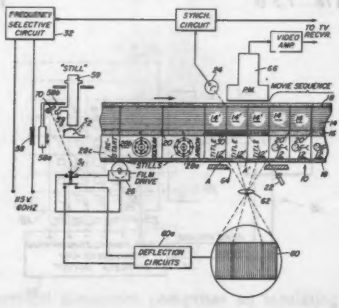
A method of, and apparatus for, reproducing documents is disclosed. A document is scanned by a flying spot scanner whose beam is modulated vertically during each horizontal scan of the document along the X-axis. The magnitude of the vertical modulation varies as a function of the vertical magnitude of the information encountered during the horizontal scan. The scanned portion of the document is reproduced by unblanking a scope with detected X-data during a horizontal sweep while simultaneously modulating the scope beam vertically.

3,627,922

VIDEO FILM CONTAINING INTERMIXED MOVIE AND STILL PICTURE INFORMATION AND REPRODUCING APPARATUS THEREFOR

Peter C. Goldmark, and Abraham A. Goldberg, both of Stamford, Conn., assignors to Columbia Broadcasting System, Inc.

Filed Oct. 29, 1969, Ser. No. 872,163
Int. Cl. H04n 5/36
U.S. Cl. 178—7.2 R **9 Claims**



System for reproducing information recorded on a film in a format comprising sections of motion picture sequences in-

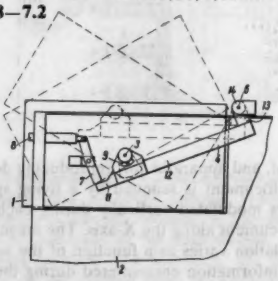
termixed with sequences of still pictures, including means responsive to indicia recorded on the film at transitions from motion picture sequences to still picture sequences for automatically stopping the film at the first still picture of a still sequence. The motion and still sequences are recorded in monochrome as two adjacent successions of picture frames separated by an intermediate strip containing synchronizing indicia (one per frame in the motion sequences) to which optical sensing apparatus in the playback system is responsive. At the transitions, the intermediate strip contains a multiplicity of similar indicia in response to which the sensing apparatus generates a signal having a frequency determined by the spacing of the indicia and the rate of travel of the film during playback of motion sequences. A circuit responsive to this signal actuates a solenoid which, in turn, deenergizes the film drive to stop the film for viewing the still picture.

3,627,923

TELEVISION CAMERA

Horst Bachmann, Darmstadt, Germany, assignor to Fernseh GmbH, Darmstadt, Germany

Filed Mar. 27, 1970, Ser. No. 023,304
Claims priority, application Germany, Apr. 5, 1969, P 19 17 671.7
Int. Cl. H04n *5/26, 7/02*
U.S. Cl. 178—7.2 **2 Claims**



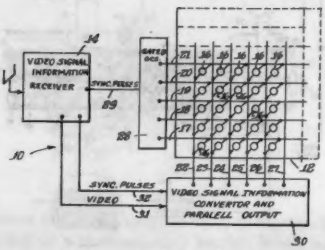
The television camera has a recess in its body for receiving a swingable electronic viewfinder. The viewfinder is pivotally supported at its center of gravity between the limbs of a fork lever. The fork lever is hinged to the camera to swing about an axis that lies beyond the range of movement of the viewfinder. The fork is spring loaded and provided with a controllable locking device.

3,627,924

FLAT SCREEN TELEVISION SYSTEM

Gordon Ross Fleming, Sylvan Lake, and Kenneth E. Van Landingham, Hazel Park, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed May 16, 1969, Ser. No. 825,274
Int. Cl. H04n *5/70*
U.S. Cl. 178—7.3 D **17 Claims**



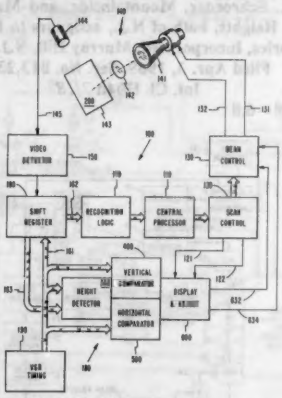
An electroluminescent array and a method and circuit arrangement for energizing the discrete elemental points on the electroluminescent array a row at a time and in a manner to energize each discrete elemental point on the selected row for different periods of time to establish a plurality of different light intensities to obtain a gradient of gray scales across the selected row visually to display a single scan line portion of a video display pattern. The electroluminescent array may include a predetermined number of row circuit lines and a predetermined number of column circuit lines arranged in a cross grid X-Y pattern to form a circuit juncture at each crossing of the column and row circuit lines, and a threshold-operated electroluminescent circuit is connected at each of the junctures. Each threshold-operated electroluminescent circuit, most advantageously, comprises a bidirectional threshold-switching device having time delay characteristics, and electroluminescent element, and a resistor. Means are provided to apply operating potential sequentially to each of the row circuit lines one after the other and, while any given row circuit line is energized each of the electroluminescent circuits connected along that row will remain in a stable off condition until a given start signal is applied to each of the column circuit lines at which time the electroluminescent circuit connected to the junctures of the selected row and the column circuit lines will be energized to emit light. The light intensity from each of the electroluminescent circuits connected across the selected row will depend on the point in time the electroluminescent circuit is rendered operative to emit light from the electroluminescent element thereof. Most advantageously, all of the electroluminescent circuits along the selected row circuit line are simultaneously deenergized by the removal of the operating potential from the row circuit line, and the next row circuit line receives operating potential to receive a subsequent scan of video information.

3,627,925

BEAM VELOCITY CORRECTION FOR FLYING SPOT OPTICAL SCANNERS

David C. Roberts, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,410
Int. Cl. H04n *3/22*
U.S. Cl. 178—7.7 **15 Claims**



A document having accurately preprinted marks is scanned with a timed raster. For vertical speed correction, the time between two series of parallel marks is compared with a standard number. On a display CRT, a short line is intensified for each scan having a duration less than the standard number; a long line is intensified for each duration longer than the standard number; and an intermediate line is intensified when the duration equals the standard number.

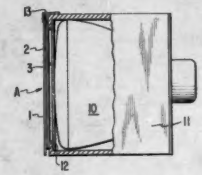
Beam velocity is adjusted to bring the greatest number of lines to the intermediate length. For horizontal speed correction, the number of scans between two vertical marks is measured. The first vertical mark is delayed in a shift register for a standard number of scans and is then displayed on the CRT. The second vertical mark is displayed on the CRT at the time of its occurrence. The beam velocity is then adjusted to line up the two mark images.

3,627,926

DESIGN GENERATION UTILIZING MOVING IMAGES

James William Nichols, 237 E. 72nd St., New York, N.Y.

Filed July 15, 1968, Ser. No. 744,905
Int. Cl. H01j 29/89
U.S. Cl. 178—7.86 2 Claims



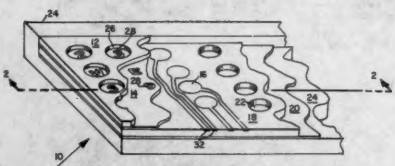
A design generator comprising a stack of aligned sheets, one of which has an opaque background with a pattern of clear portions therein and the others are transparent and differently colored. When the assembled stack is placed in front of a screen upon which moving images are projected, the screen being that of a black and white or colored television set, or a black and white or color cinematic projection, components of the projected moving images pass through the patterns of clear portions in the opaque sheet, the black and white or color images being modified by the colored sheets. A viewer looking at the opaque sheet sees a continuously changing pattern of colored designs, as the projected moving images move relative to the design generator.

3,627,927

MONOLITHIC KEYBOARD AND METHOD FOR MAKING SAME

Herbert E. Schmitz, Amherst, and Robert A. Bleau, South Lyndeboro, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Nov. 24, 1969, Ser. No. 879,479
Int. Cl. H04l 15/16
U.S. Cl. 178—17 C 16 Claims



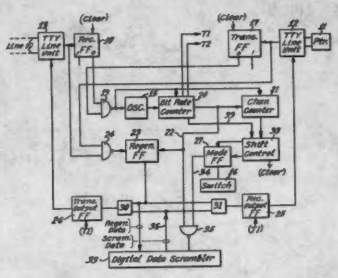
A monolithic keyboard constructed in layers with inexpensive materials and which has no conventional moving parts is disclosed. In one embodiment, the layers include a bottom or first layer of conductive material, a second layer of spongy material with holes cut therein, and a third layer of flexible printed circuit. This flexible printed circuit includes a sheet of insulating material with conductive pads placed thereunder in registration with the holes in the spongy material. Key symbols are etched on or printed over the conductive pads thereby indicating the placement of the keys. Depressing the key causes contact to be made between the respective pad and the first layer of conductive material. The spongy material gives the operator the "touch" of a standard typewriter keyboard.

3,627,928

TELEGRAPH PRIVACY SYSTEM

Donald F. Wolper, Stony Brook, and Bernard M. Rosenheck, Huntington, both of N.Y., assignors to Litton Systems, Inc.

Filed Feb. 4, 1969, Ser. No. 796,464
Int. Cl. H04l 9/04
U.S. Cl. 178—22 8 Claims



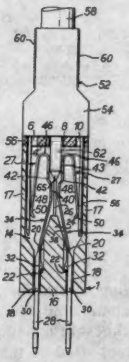
A telegraph privacy system employing standard teleprinter apparatus arranged for half-duplex operation. The data bits of the telegraph character signals from the keyboard of the teleprinter are combined with the output data of a digital data scrambler-descrambler unit to insure privacy in transmission of messages. The scrambler-descrambler unit is of the self-synchronizing type whereby transmission can be commenced from any telegraph station at any time without special code synchronization or manual operation of a send-receive switch or other control. The timing and control of the system's functions are effected by logic circuits and electronic gated switching devices.

3,627,929

ELECTRICAL CONNECTOR HAVING NORMALLY ENGAGED CAMMABLY OPERATED CONTACTS

Hermanus Petrus Johannes Gilissen, Vlijmen, and Lucas Gerardus Christianus Teurlings, S-Hertogenbosch, both of Netherlands, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 20, 1969, Ser. No. 878,468
Claims priority, application Netherlands, Nov. 22, 1968, 6816760
Int. Cl. H01r 17/00
U.S. Cl. 179—96 7 Claims



An electrical connector comprises an insulating housing containing pairs of contact springs, the springs of each pair normally engaging one another. The springs of the pairs can

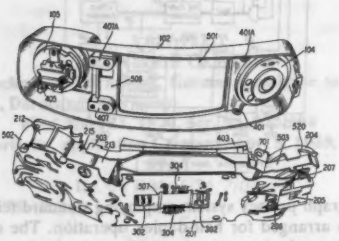
be cammed apart by insulating plugs inserted through holes in the housing to isolate subscribers and to allow line testing by test tabs inserted through further holes in the housing to engage the contact springs.

3,627,930

DIAL-IN-HANDSET TELEPHONE ASSEMBLY

Warren R. Tolman, Indianapolis, Ind., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 27, 1969, Ser. No. 869,777
Int. Cl. H04m *1/02*
U.S. Cl. 179—100 R 2 Claims



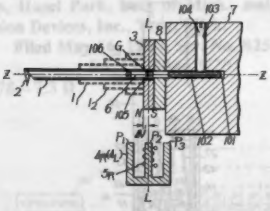
In a dial-in-handset telephone, manufacture and assembly are simplified and weight and costs are reduced by a number of structural features that serve to integrate the subassemblies of the set into a single integral unit. These features include combining the dial and network discrete components on a single double-sided flexible printed circuit board and the use of extended brackets mounted on the pushbutton dial assembly as a telephone set chassis.

3,627,931

MOVING MAGNET TYPE STEREO PICKUP

Hitoshi Matsuda, Tokyo, Japan, assignor to Nippon Columbia Kabushiki Kaisha (Nippon Columbia Co. Ltd.), Tokyo, Japan

Filed Jan. 23, 1968, Ser. No. 699,936
Int. Cl. H04r *11/12*
U.S. Cl. 179—100.41K 11 Claims



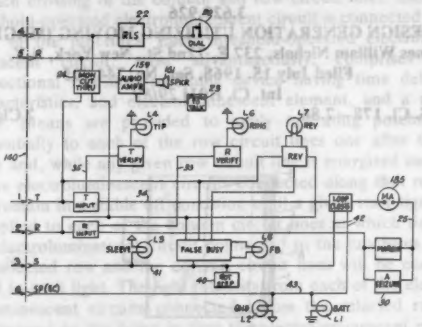
A stereo pickup having an arm for carrying a stylus at one end and an armature comprising a flat magnet magnetized in the direction of its thickness attached to the other end of the arm and the pickup supported so that the armature has its center of gravity at substantially the center of vibration of the vibration system and a magnetic pickup coil supported relative to the armature so as to pick up the vibratory signals from the pickup.

3,627,932

TEST MEANS FOR TELEPHONE SWITCHING SYSTEMS

Jim C. Garrett, and Robert H. Johnson, both of 3300 E. Spring St., Long Beach, Calif.

Filed Feb. 17, 1969, Ser. No. 799,628
Int. Cl. H04m *1/24, 3/08*
U.S. Cl. 179—175 5 Claims



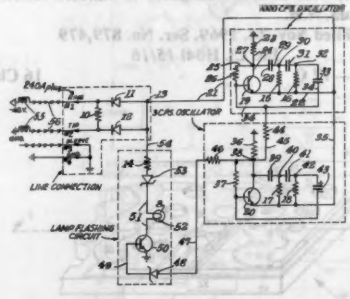
A compact, lightweight and portable set for testing trunk wiring in telephone step-by-step switching systems, comprising means allowing rapid detection of circuit malfunctions, means to indicate the presence of "false busies" and means to perform such test functions without interfering with working circuits and providing, for the user, the means to communicate with anyoné encountered during testing.

3,627,933

DEVICE FOR TRACING A TELEPHONE SWITCH TRAIN

Jim C. Garrett, and Robert H. Johnson, both of 3300 East Spring St., Long Beach, Calif.

Filed Sept. 12, 1969, Ser. No. 857,392
Int. Cl. H04m *3/26*
U.S. Cl. 179—175.2 3 Claims



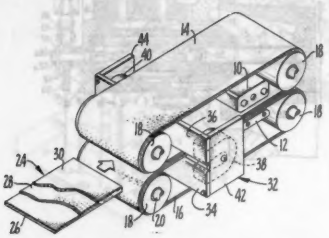
A self-contained, solid-state device adapted for connection to a switch test jack of a telephone central office and requiring no external electrical power, comprising means to hold the switch train regardless of correct or reversed polarity of the trunk, a blinking light serving as a visual reminder that the device is in position to trace a call through the central office and that the switch train is being held up for tracing or testing purposes, using loop resistance to hold the switch train forward, a grounded sleeve contact to hold the train backward, and an audio range oscillator to place a clear and distinct interrupted trace tone on the train being held up.

3,627,934

METHOD AND APPARATUS FOR VERIFYING MAGNETIC RECORDS

John B. Riddle, Los Altos Hills, Calif., assignor to Micro-Magnetic Industries, Inc., Palo Alto, Calif.

Filed Apr. 9, 1969, Ser. No. 814,718
Int. Cl. G11b 5/02; G06k 5/00
U.S. Cl. 179—100.2 B 3 Claims



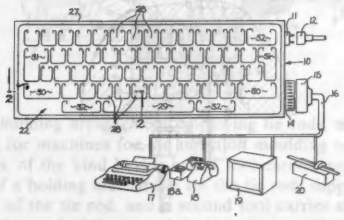
A method and apparatus for verifying the validity of magnetic records such as credit cards carrying magnetic information in a layer of magnetically susceptible material by subjecting the records prior to the conclusion of playback to a high-intensity erasing field which has an intensity less than the coercivity of the magnetically susceptible material.

3,627,935

MULTIPLE-SWITCH BANK AND KEYBOARD

Louis A. Spievak, 2905 Mandeville Canyon, Los Angeles, Calif.

Filed Feb. 19, 1970, Ser. No. 12,735
Int. Cl. H01h 9/26, 3/02
U.S. Cl. 200—5 R 46 Claims



A multiple-switch bank is provided that generates a unique group of electrical pulses at each switch whereby each group of pulses represents a specific bit of intelligence or information to be coded and transmitted. Coding is accomplished by providing at each switch a plurality of contacts which can be brought into engagement with an equal number of code bars. Some bars are coated with a nonconductive layer whereby at the remaining bars there can be established a unique pattern of conductive electrical contacts. The switches are manually operated from a keyboard of novel design in which the keys may be arranged in the conventional pattern of a typewriter. The block with the code bars can be removed and replaced by another one in order to reprogram all the coded signals. The signals are particularly compatible with receiving equipment adapted to operate on binary codes.

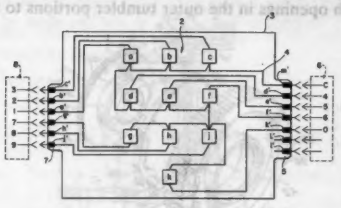
3,627,936

APPARATUS FOR CONVERTING KEYBOARD FORMATS

Robert E. Cullen, Foxborough, Mass., assignor to Eastman Kodak Company

Filed Apr. 27, 1970, Ser. No. 31,901
Int. Cl. H01h 9/26; H04m 1/26
U.S. Cl. 200—5 E 8 Claims

The electrical circuitry to the switches of a keyboard are changed between a business machine format and a telephone format by the removal, inversion, and reconnection of a connector. The keys are rearranged manually to reflect the changed electrical format.

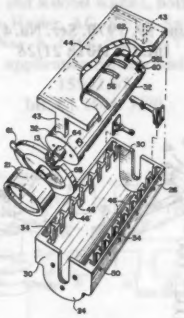


3,627,937

CAM SELECTOR SWITCH MECAHNISM WITH LOST MOTION STRUCTURE FOR USE IN ELECTRO-MECHANICAL TIMERS

Roy L. Swanke, Newington, and William J. Conlon, New Britain, both of Conn., assignors to Dynamics Corporation of America, New York, N.Y.

Filed Apr. 9, 1970, Ser. No. 26,967
Int. Cl. H01h 7/08, 43/10
U.S. Cl. 200—38 B 22 Claims



An appliance motor speed control system with a simplified space saving rotatable permutation switching component for multiple field coil windings in which switches are permuted in patterns to change the effective impedance of the motor field and without energizing the motor during transition from one setting to another. The component includes sequential speed selection switching between light switches rated to break the electrical current. Single-pole double-throw switches further conserve space and parts while push-in wire connections reduce assembly time and production costs.

3,627,938

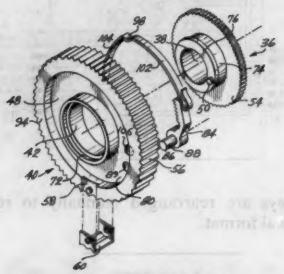
PERMUTATION SWITCH

William J. Davidson, Scio, Oreg., assignor to Electronic Controls Corporation, Scio, Oreg.

Filed Apr. 17, 1970, Ser. No. 29,528
Int. Cl. H01h 27/10
U.S. Cl. 200—43 11 Claims

A plurality of tumblers are rotated by means made operable by selective movements of a combination dial to place conductive or dielectric peripheral regions of the tumblers in circuit making or breaking contact with spring contact fingers. The tumblers comprise annular outer portions surrounding inner portions which are independently rotatably mounted on a shaft. Releasable lock levers normally connect the two tumbler portions together for conjoint rotation. A radial actuator arm is secured to the rear end portion of the shaft. The inner portion of the rear tumbler includes a rear abutment positioned to be moved by the arm. Front and/or

rear abutments on the inner portions of the remaining tumblers transmit rotary motion of the rear tumbler to the other tumblers. A pin is insertable from the rear of the switch through openings in the outer tumbler portions to both move



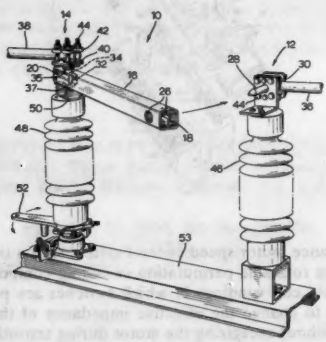
the lock levers into release positions and lock such out portions together. This permits use of the dial to change the azimuthal position of the peripheral segments relative to the dial indicia, and the combination of the switch.

3,627,939

ELECTRIC SWITCH

John Howard Myers, Guelph, Ontario, Canada, assignor to Kearney-National (Canada) Limited, Guelph, Ontario, Canada

Filed June 19, 1970, Ser. No. 47,733
Int. Cl. H01h *21/28*
U.S. Cl. 200—48 **14 Claims**



An electrical switch includes a pivotable switch blade having finger contact means carried thereby and an elongated contact associated with at least one of the terminals to engage and deflect the finger in the switch-closed position.

In addition, the blade may be pivoted at one end and when so pivoted is provided with finger contact means which engage the pivot to provide electrical contact between the terminal and the pivot pin.

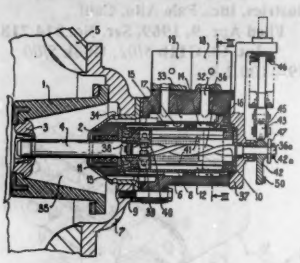
3,627,940

EARTHING SWITCHES

Rintje Boersma, Harmelen, and Gijsbert Waldemar Irik, Bilthoven, both of Netherlands, assignors to N.V. COQ Utrecht, Netherlands

Filed Aug. 28, 1970, Ser. No. 67,937
Claims priority, application Netherlands, Nov. 4, 1969, 6916587
Int. Cl. H01h *31/00*
U.S. Cl. 200—48 **3 Claims**

Earthing switch, of which the movable switching contact is normally driven by a piston and is also coupled with a non-self-braking screwed rod, by means of which the switching contact can be driven by hand, said screwed rod forming at



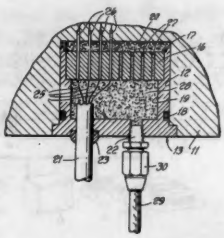
the same time part of a locking mechanism to lock the switching contact in its end positions and of an indicator to indicate the position of the switching contact.

3,627,941

PNEUMATIC CABLE EJECTOR

Donald H. Wrathall, Portsmouth, R.I., assignor to The United States of America as represented by the Secretary of the Navy

Filed May 20, 1970, Ser. No. 39,675
Int. Cl. H01r *33/30*
U.S. Cl. 200—51 R **2 Claims**



A system for removing a connecting cable from a torpedo at the time of applying an electrical firing pulse is provided. Compressed CO_2 is applied through a solenoid-operated gas valve to a plug connecting the cable to the torpedo, providing the force for ejecting the cable plug from the torpedo. A time delay circuit preferably is connected in series with the solenoid valve to insure that the torpedo receives the firing pulse before the plug is ejected.

3,627,942

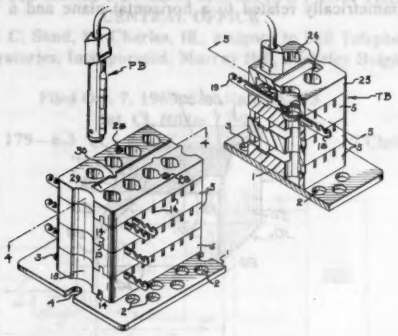
TERMINAL BLOCK HAVING AN OPENING THEREIN WITH NORMALLY ENGAGED CONTACTS IN ALIGNMENT WITH THE OPENING AND A PLUG FOR ENGAGEMENT WITH THE CONTACTS

Clifford Frank Bobb, Carlisle, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 9, 1964, Ser. No. 358,548
Int. Cl. H02r *33/30*
U.S. Cl. 200—51.07 **7 Claims**

A terminal block and plug are disclosed, the block comprising a plurality of stacked block members having openings therein, each opening having normally engaged contact

means therein, the plug having means for engaging the contacts and being insertable into the openings. The plug is



rotatable in the openings to make and break the contact means disposed in the openings.

3,627,943

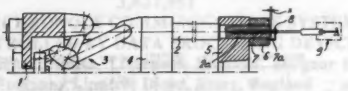
TOOLHOLDING ARRANGEMENT INCLUDING IMPROVED CONTROL SIGNAL PRODUCING MEANS

Armin Blumer, Schwanden, Switzerland, assignor to Maschinenfabrik und Giesserei Netstal AG, Netstal, Switzerland

Filed May 15, 1969, Ser. No. 824,968

Int. Cl. H01h *35/00*

U.S. Cl. 200—52 **11 Claims**



A toolholding arrangement employing tie rods, more particularly for machines for the injection moulding of plastics materials, of the kind having a first tool carrier movable by means of a holding mechanism on the tie rods supported on one end of the tie rod, and a second tool carrier supported on the other end of the tie rod. In accordance with the invention, means are arranged on each individual tie rod, which transform a tie rod load exceeding a predetermined size, into an operating parameter to which there responds a sensitivity device providing a control signal.

3,627,944

SENSING AND CONTROL APPARATUS FOR WEBS

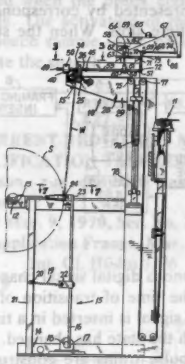
Donald G. Field, Trenton, N.J., assignor to Holland-Rantos Company, Inc., Piscataway, N.J.

Filed Mar. 24, 1970, Ser. No. 22,275

Int. Cl. B65h *25/14*

U.S. Cl. 200—61.13 **3 Claims**

A sensing and control apparatus for detecting thickness irregularities or the like in webs, such as paper webs. The apparatus includes a reference roller rotatably mounted about a fixed horizontal axis, and a motion detector roller mounted for vertical shifting movement, the rollers being adapted to lie tangent to a web disposed therebetween. A cross-shaft is provided, the shaft being mounted for rotation about a horizontal axis parallel with the axis of rotation of the rollers. Follower means on the cross-shaft engage on seats provided on the detector roller, such that upward movement of either end of the roller caused by a flaw in the web will induce a rotation of the shaft. The connection between the follower and roller is such as to permit pivotal movement about an axis essentially perpendicular to the pivot axis of the cross-



shaft. Motion magnifying means for operating a cutoff switch are connected to the cross-shaft.

3,627,945

TRANSMISSION OF ASYNCHRONOUS TELEGRAPHIC SIGNALS

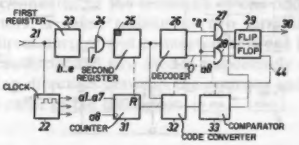
Ernst Diggelmann, and Rudolf Kuhne, both of Berne, Switzerland, assignors to Hasler, AG, Berne, Switzerland

Filed Nov. 6, 1968, Ser. No. 773,800

Claims priority, application Switzerland, Nov. 16, 1967, 15931/67

Int. Cl. H04l *3/00*

U.S. Cl. 178—50 **2 Claims**



In transmitting telegraphic signals, binary asynchronous signals are scanned at regular intervals and combined to form scanning groups, each of which is converted to a code word. The data contained in the code word is then transmitted via a telegraphy channel to the receiving end of the line where it is converted to a binary time-quantitized output signal. The circuit for performing these operations has a transmitter part and a receiver part. The transmitter part has a master clock, for transmitting different pulse series for controlling the scanning and transmission, a channel unit for scanning the signal and a code converter for converting the scanning group into a code word. The receiver part has a master clock synchronized by the received signals, a counter for counting pulses corresponding to the scanning pulses and an output flip-flop.

3,627,946

METHOD AND APPARATUS FOR ENCODING ASYNCHRONOUS DIGITAL SIGNALS

Nobuo Inoue, and Yuichi Sato, both of Tokyo, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed July 8, 1969, Ser. No. 839,965

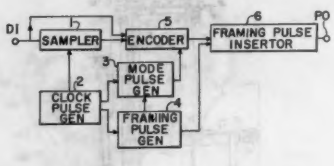
Claims priority, application Japan, July 9, 1968, 43/47615

Int. Cl. H04b *1/04, 1/16;* **H03k** *13/00*

U.S. Cl. 178—68 **3 Claims**

In transmitting a digital signal, e.g. a digital signal on a PCM transmission line which is asynchronous with a clock

signal, a first and a second state pulse trains respectively corresponding to one of the binary states of the digital signal are utilized and the output pulse trains of the asynchronous digital signal are represented by corresponding mode pulse trains in respective time slots. When the state of the pulse



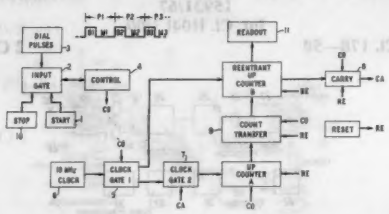
train of the asynchronous digital signal changes an indicating pulse representing the time of transition of the state of the asynchronous digital signal is inserted in a time slot following the time slot in which the state has changed. On the receiving terminal the mode pulse trains are constructed by utilizing the framing pulse as the reference signal.

3,627,947

MEASUREMENT OF MINIMUM OF A SERIES OF TIME INTERVALS

Henry Mann, Holmdel, N.J., and Joseph A. Whiteaker, Rock Hill, S.C., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 24, 1969, Ser. No. 879,283
Int. Cl. H04l *25/02*; H04m *1/24*
U.S. Cl. 178—69 A **20 Claims**



The circuit uses digital technique to measure minimum break (or make) interval over a series of telephone dial pulses. During the first break, clock pulses are serially counted in a binary coded decimal up-counter A. At the end of the first break, the nine's complement of the A count is transferred into a binary coded decimal reentrant up-counter B of the same count capacity as A; and, the old (first) count is erased from A (i.e., A is reset to zero count). During the second (new) break, clock pulses are serially counted in A while being serially added (complementary addition equals subtraction of old count from new count) to the count in B. If the count in B exceeds the capacity of B, further counting in A is stopped. At the end of each new measured break, A contains the minimum of the old and new counts, the nine's complement of the minimum is transferred to B, the A counter is returned to zero count, and the process repeats. Visual display is provided of the minimum count by translation from clock pulse count in B to milliseconds.

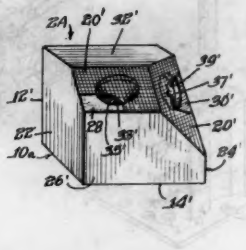
3,627,948

STEREO LOUDSPEAKER SYSTEM

Frederick W. Nichols, South Bend, Ind., assignor to Electro-Voice, Inc., Buchanan, Mich.

Filed Aug. 18, 1969, Ser. No. 850,949
Int. Cl. G10k *11/00*
U.S. Cl. 179—1 GA **24 Claims**

A stereo loudspeaker system with right-hand and left-hand loudspeaker sections each having forwardly and rearwardly directed loudspeaker means fed with middle and high-frequency signals of the associated stereo channel, the rearwardly directed loudspeaker means of each loudspeaker section providing an overall directive sound pattern which is asymmetrically related to a horizontal plane and a vertical



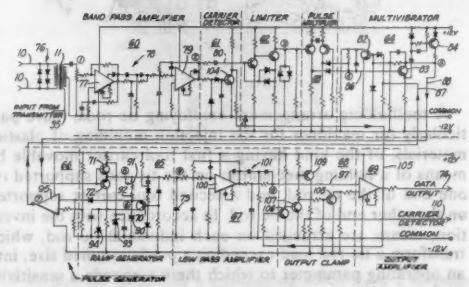
plane extending transversely to the vertical sound reflecting wall in a room in front of which the loudspeaker system is placed. Means are provided for selectively orienting the asymmetric pattern of the rearwardly directed loudspeaker means so the pattern is directed principally laterally inwardly or principally outwardly of said vertical plane.

3,627,949

DIGITAL DATA TRANSMISSION SYSTEM

Tihomir Krecic, Arcadia, and Irving H. Ross, Duarte, both of Calif., assignors to Western Telematic Inc., Arcadia, Calif.

Filed Jan. 15, 1970, Ser. No. 3,031
Int. Cl. H04m *11/06*; H04l *27/14*
U.S. Cl. 179—2 DP **10 Claims**

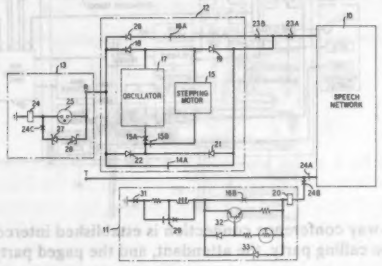


A system for transmission of digital data on telephone-type voice circuits, which is compatible with conventional transmission equipment while being considerably smaller in size and weight. A transmitter including a multivibrator operating at two frequencies in response to mark and space signals, and a low-pass filter in the form of an operational amplifier to provide a sinusoidal output to the transmission circuit. A receiver including a band-pass amplifier, a limiter, a pulse multiplier, a multivibrator detector, a low-pass amplifier, and an output stage to produce mark and space signals corresponding to those at the input of the transmitter. The band-pass and low-pass amplifiers incorporate operational amplifiers to provide the customary filtering operation while eliminating the conventional large filter components. The multivibrator is switched to one state by the zero crossing of the input, or multiple thereof, and is switched to the other state by a precisely controlled ramp generator obtaining precision control of time and energy in the output signal.

3,627,950
DIAL-TONE-FIRST COIN TELEPHONE CIRCUIT IN WHICH STATION GROUND IS ISOLATED FROM THE CIRCUIT EXCEPT DURING SIGNALING FROM THE CENTRAL OFFICE

William C. Sand, St. Charles, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 7, 1969, Ser. No. 864,413
Int. Cl. H04m 17/02
U.S. Cl. 179—6.3 7 Claims

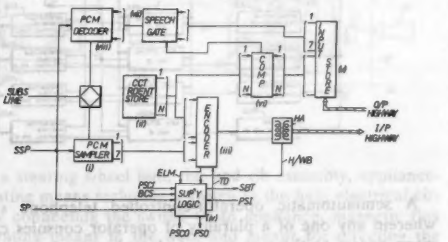


A dial-tone-first coin telephone circuit is disclosed in which a battery reversal from the central office switches the circuit between two modes of coin signaling. A relay coil is connected between the ring terminal and ground, to disconnect an initial deposit circuit from the station loop except in response to a predetermined signal sent on the ring conductor.

3,627,951
ASYNCHRONOUS COMMUNICATIONS SYSTEM CONTROLLED BY DATA PROCESSING DEVICE

Thomas Richard Batin, Liverpool, England, assignor to The Plessey Company Limited, Ilford, Essex, England

Filed Aug. 21, 1969, Ser. No. 851,810
Claims priority, application Great Britain, Aug. 27, 1968, 40,914/68
Int. Cl. H04j 3/16
U.S. Cl. 179—15 BA 4 Claims

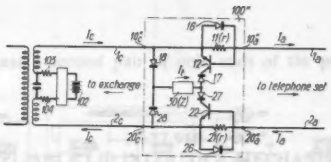


A telephone switching system controlled by a data processing device in which the data processing device performs the switching function. Each calling line is allocated a slot on a large multichannel P.C.M. highway and an originating code is prefixed to each speech sample representing the identity of the circuit producing the sample. The complete composite data word is loaded via the single T.D.M. input highway onto the input of the real-time general purpose computer. The computer software provides sorting facilities to determine circuit identity and, via control programs, the identity of the samples destination. The originating code is replaced by the required destination code and the new composite data word is applied to a single T.D.M. output data highway. The output data highway is multiplied to all "line circuits" and each line circuit includes a comparator circuit which is activated when the prefix code corresponds to its own identity code. The activation of the comparator allows the associated speech sample to be passed to the associated line to reconstitute the speech.

3,627,952
DIRECT CURRENT REDUCTION NETWORK FOR AMPLIFICATION TELEPHONE SETS

Jean-Michel Person, rue du Parc Saint Jacques, Perros-Guirec, 22, France

Filed Mar. 9, 1970, Ser. No. 17,761
Claims priority, application France, Mar. 12, 1969, 69-06864
Int. Cl. H04m 1/76
U.S. Cl. 179—16 F 3 Claims

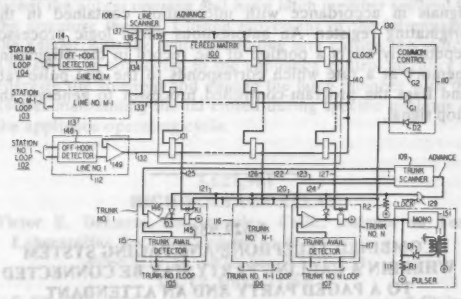


Direct-current reduction network which shunts a part of the supply current of a subscriber's telephone set having a microphone current amplifier in order to have on the exchange side a large direct-current capable of acting on the loop detection system of the exchange and on the telephone set side a smaller current. It comprises two equal resistors inserted in one and the other of the subscriber's line wires respectively, two transistors having their base-emitter paths respectively connected to the terminals of one and the other of said resistors, a shunt resistor or two terminal-network passing the direct-current and connected between the collectors of the transistors and two diodes respectively connected in their passing direction between the emitters and collector of one or the other of the transistors.

3,627,953
LINE SCANNER CIRCUIT FOR DATA CONCENTRATOR

George P. Houcke, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 19, 1969, Ser. No. 825,623
Int. Cl. H04g 3/24
U.S. Cl. 179—18 FG 4 Claims



Bidding data station lines and idle trunks are interconnected by way of a switch matrix. Line and trunk scanners are provided to hunt for bidding lines and available trunk, respectively. When a trunk scanner locates an available trunk, it locks on the trunk and stops hunting. The line scanner is arranged to hunt for a bidding line without regard

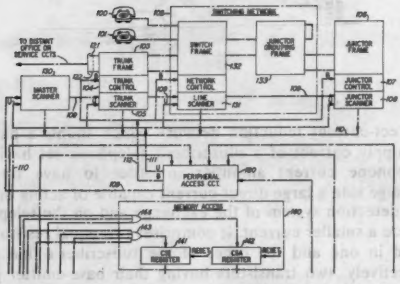
to the availability of a trunk. When no trunk is available, the line scanner locks on the first bidding line it locates to provide pseudoqueuing by serving the bidding line first when a trunk becomes free.

3,627,954

CALL-SIGNALING PROCESSOR IN A TELEPHONE-SWITCHING SYSTEM

Thomas M Quinn, West Chicago, Ill., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 21, 1969, Ser. No. 686,024
Int. Cl. H04q 3/54
U.S. Cl. 179—18 ES **6 Claims**



A program-controlled telephone switching system wherein dial pulse transmission to trunks is effected by a plurality of dial pulse sender circuits which are connected to terminals of the telephone-switching network. During outpulsing a connection is established through the network between a dial pulse sender circuit and a selected trunk circuit. Each such sender circuit is responsive to a start signal to transmit a sequence of dial pulses and is responsive to a stop signal to terminate the transmission of such dial pulses. A common source is provided for generating the dial pulses for all sender circuits. A record of the information to be outpulsed is maintained in a multiword-originating register in a bulk memory. A program-controlled processor generates the start and stop signals in accordance with information contained in the originating register. An autonomous wired logic processor repetitively alters a portion of the record in the originating memory at a rate which corresponds to the dial pulse rate and flags the program-controlled processor to generate the stop signal.

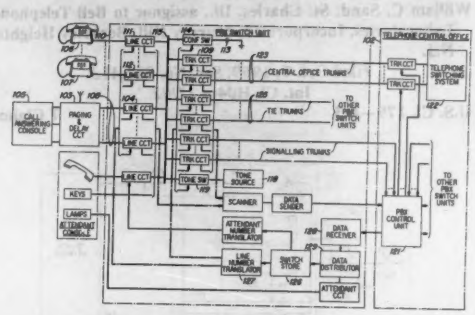
3,627,955

COMBINED TELEPHONE AND PAGING SYSTEM WHEREIN A CALLING PARTY MAY BE CONNECTED TO A PAGED PARTY AND AN ATTENDANT

Richard C. Stone, Jr., Glen Ellyn, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.Y.

Filed Dec. 8, 1969, Ser. No. 882,860
Int. Cl. H04m 3/42
U.S. Cl. 179—18 BF **9 Claims**

In a combined telephone paging system, a paging call may be answered by the paged party from any station of the system and by an attendant from a call answering console. If the paged party answers after the attendant has answered, a three-way conference connection is established interconnecting the calling party, the attendant, and the paged party.

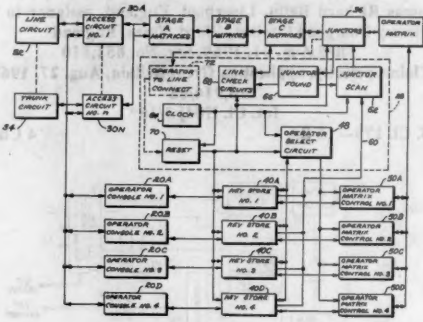


3,627,956

SEMIAUTOMATIC OPERATOR-CONTROLLED TELEPHONE SYSTEM

Klaus Gueldenpfennig, and Gerhard O. K. Schneider, both of Rochester, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Dec. 19, 1969, Ser. No. 886,577
Int. Cl. H04m 3/60
U.S. Cl. 179—27 CA **19 Claims**



A semiautomatic operator-controlled telephone system wherein any one of a plurality of operator consoles can be given access to the system control equipment for automatically setting up the connections between input circuits by merely sequentially actuating the switches designating the input circuits. Separate control circuits for each of the consoles are interconnected so that only one operator console can gain access to the control equipment at one time and the other operator consoles are inhibited. The control circuits are released after the connections between the operator and an input circuit are complete, or after a sufficient period of time to complete the connections.

ERRATA

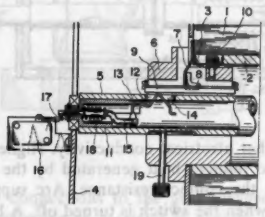
For Classes 200—5 and 200—61 see:
Patent Nos. 3,627,935 and 3,627,944

3,627,957

DEVICE FOR DETECTING THE END OF ROLLED PHOTOSENSITIVE PAPER FOR AUTOMATIC COPYING MACHINES

Yugoro Kobayashi, and Tsutomu Yamakami, both of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1970, Ser. No. 30,078
Claims priority, application Japan, May 6, 1970, 44/34058
Int. Cl. B65h 25/14
U.S. Cl. 200—61.16 7 Claims



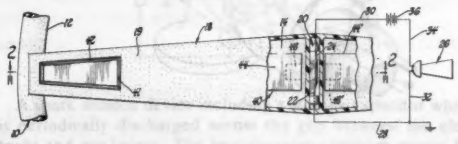
An automatic copying machine having therein a roll of photosensitive paper includes a device for detecting the end of rolled photosensitive paper. This device has a detection lever which contacts with one side surface of the roll of photosensitive paper and pivots when the roll has run out. This pivotal movement of the detection lever is used as a detecting signal.

3,627,958

MAGNETIC HORN SWITCH

Douglas D. Liedel, Belleville, and Lars J. Hierta, Westland, both of Mich., assignors to Western Sales Corp., Southfield, Mich.

Filed Feb. 27, 1970, Ser. No. 15,126
Int. Cl. H01h 9/00
U.S. Cl. 200—61.54 11 Claims



In a steering wheel hub, rim and rib assembly, appliance-operating means including a switch in the hub, electrical circuitry connecting the switch to an appliance, magnetic flux generating means in the hub, and means for directing the magnetic flux to the switch to close same and operate the appliance.

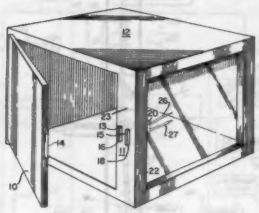
3,627,959

MAGNETIC LATCHING AND SWITCHING

Harry F. Chapell, Maynard, Mass., assignor to Sage Laboratories, Inc., Natick, Mass.

Filed Mar. 19, 1970, Ser. No. 21,111
Int. Cl. H01h 3/16
U.S. Cl. 200—61.62 10 Claims

A door latch and magnetically actuable switch includes an H-shaped permanent magnet and pole assembly for both latching and switching having a first pair of pole ends that are shunted by a striker plate of low-reluctance ferromagnetic material located in the door when the door is closed. Opening the door removes the shunt to actuate a magnetic switch



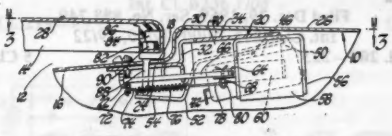
located near a second pair of pole ends of the permanent magnet.

3,627,960

APPLIANCE LID INTERLOCK MECHANISM

Frederick M. Grabek, Kettering, Ohio, assignor to General Motors Corporatin, Detroit, Mich.

Filed Nov. 6, 1970, Ser. No. 87,480
Int. Cl. H01h 27/10
U.S. Cl. 200—61.64 4 Claims



A lid interlock mechanism for an appliance cabinet of the type having an access opening closed by a pivotal lid. A keeper is secured to the lid and extends into the cabinet when the lid is closed. A switch assembly is mounted adjacent the access opening and has an actuating arm extending into the opening. A solenoid assembly is also mounted adjacent the access opening and has a latch member secured to the armature thereof. Closing movement of the lid engages the keeper with the switch-actuating arm closing the switch. The switch is connected in the appliance control circuitry to energize the solenoid and engage the latch member with the keeper maintaining the lid closed during specific portions of the appliance operating cycle.

3,627,961

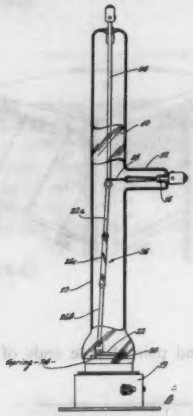
HIGH-VOLTAGE RELAY

Victor E. DeLucia, Los Angeles, Calif., assignor to Torr Laboratories, Inc., Los Angeles, Calif.

Filed May 26, 1970, Ser. No. 40,531
Int. Cl. H01h 33/66
U.S. Cl. 200—144 B 2 Claims

A high-voltage relay is provided in which the operating components of the relay are enclosed in a sealed envelope which may be evacuated, for example, or filled with a pressurized dielectric gas. The relay is constructed to include an elongated envelope formed of glass, or other vitreous or electrically insulating material, and which has electrical terminals extending through the envelope at the side of the envelope

and at one end, so as to provide good insulation from the grounded electromagnetic actuating components at the other



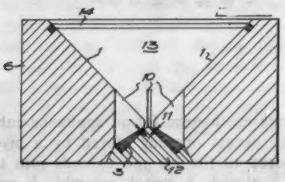
end of the relay, in order that the relay may be operated at high voltages.

3,627,962

GRAVITY-OPERATED MERCURY SWITCH WITH CONICALLY SHAPED RESERVOIR

Leslie Chapman, Yorkshire, England, assignor to Lelio Development & Products Limited, Leeds, Yorkshire, England

Filed Dec. 29, 1969, Ser. No. 888,749
Int. Cl. H01h *29/00, 29/20, 29/22*
U.S. Cl. 200—223 **5 Claims**



A gravity-operated mercury switch having a mercury reservoir with a cone-shaped base, the reservoir communicating by way of a throatlike aperture with the apex of a conical switching surface contained in the switch body. The throatlike aperture comprises a passage for the mercury and a plurality of vents dimensioned so as to allow free flow of gas along the vents but not to allow entry of mercury into the vents. The conical switching surface may be of irregular form having angles varying from 15° to 90°, may have more than one slope and may be stepped.

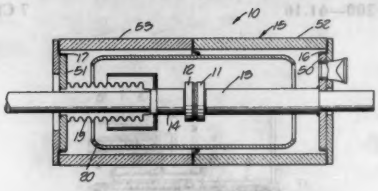
3,627,963

VACUUM INTERRUPTER CONTACTS

Wesley N. Lindsay, 10710 Ridgeview Ave., San Jose, Calif.

Continuation of application Ser. No. 837,124, June 27, 1969, now abandoned. This application Mar. 18, 1971, Ser. No. 125,869
Int. Cl. H01h *1/02*
U.S. Cl. 200—166 C **9 Claims**

The contacts of the arrangement are employed in a vacuum interrupter and include discrete bodies of copper and titanium sintered or laminated together. It is old in the art to employ a copper and titanium alloy in such contacts. However, it has been discovered that the use of a sintered or laminated structure increases the thermal and electrical conductivity of the contacts from about 17 to 90 percent of that of pure copper. The titanium still retains its desirable property of preventing contact welding. It also acts as an unusually good getter. The conductivity increase, however, affords substantial additional advantages. Switching efficiency is improved by a higher electrical conductivity. Higher electrical conductivity also reduces heat generated by the passage of current through the contact resistance. Arc suppression is, thus, enhanced when the switch is turned off. A higher thermal conductivity also helps in arc suppression because the heat caused by the arc and current passing through the contact resistance is quickly conducted away.

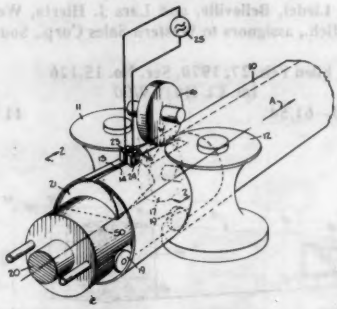


3,627,964

LAPPED WELDING OF METAL EDGE PORTIONS

Jack Morris, Monsey, N.Y., assignor to AMF Incorporated

Filed July 26, 1963, Ser. No. 297,912
Int. Cl. B23k *1/16*
U.S. Cl. 219—64 **16 Claims**



In the welding together of edge portions of metal strip with high-frequency electric current, the portions are advanced toward a weld point first in nonoverlapping relation, then in overlapping relation and finally in overlapping, contacting relation at the weld point where they are pressed together. The current is applied so as to flow on the edge portions both before and after the point where they are first brought into overlapping relation so as to restrict the heating of the edge portions to the edges and narrow facing bands adjacent thereto.

3,627,965

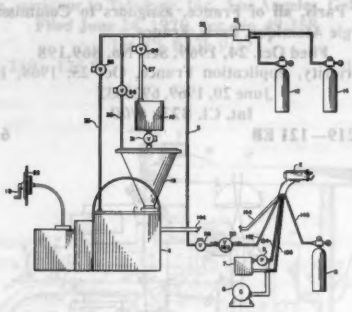
IONIZING METHOD AND APPARATUS

Emanuel Zweig, 1102 North King Street, Santa Ana, Calif.

Continuation-in-part of application Ser. No. 66,106, Oct. 31, 1960. This application Jan. 21, 1966, Ser. No. 522,193
Int. Cl. B23k *9/04*
U.S. Cl. 219—76 **9 Claims**

A plasma gun and powder feed system has purge means for removal of all atmospheric or other matter from the

powder feeder, the gun, and inner connecting conduits prior to gun operation. Accurate and automatic flow rate control means are included both for the ionizing gas and the powder



feed supply connections to the gun. Oxygen-free purity of powdered materials as received in airtight containers from the manufacturer is thus preserved throughout operation of the plasma-spray system disclosed.

3,627,966

DEVICE FOR REMOVING MATERIAL FROM A WORKPIECE BY MEANS OF SPARK EROSION

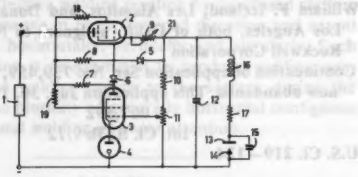
Cornelis van Osenbruggen; Gerrit Luimes, and Ate van Dijk, all of Emmasingel, Eindhoven, Netherlands, assignors to North American Philips Company Inc., New York, N.Y.

Continuation of application Ser. No. 587,326, Oct. 17, 1966. This application Mar. 27, 1970, Ser. No. 020,874

Claims priority, application Netherlands, Oct. 16, 1965, 6513424

Int. Cl. B23k *9/16*

U.S. Cl. 219—69 C **15 Claims**



A spark erosion device including a storage capacitor which is periodically discharged across the gap between the electrode and workpiece. The improvement concerns means for limiting the duration of the arc discharge phase of the operation comprising, a source of constant current for charging the capacitor, means for disconnecting the current source from the capacitor when the gap breakdown voltage is reached, and the addition of an inductor in the capacitor discharge circuit to provide a resonant effect to limit the arc time across the gap.

3,627,967

POWER SWITCH SHORT CIRCUIT DETECTOR FOR EDM

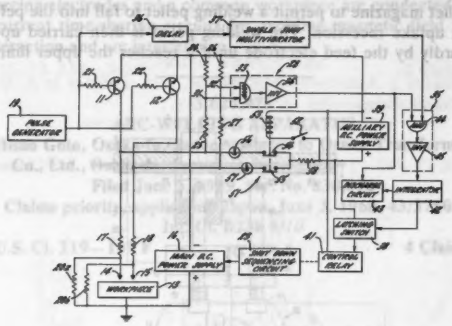
Robert B. Bertolasi, and Eiichi Takarada, both of Rockford, Ill., assignors to Amsted Industries, Incorporated, Lone Park, Ill.

Filed June 15, 1970, Ser. No. 45,956

Int. Cl. B23k *9/16*

U.S. Cl. 219—69 S **13 Claims**

To detect short circuit failures of power switches in electrical discharge machining power supplies, the voltages developed across the power circuits of the power switches are sampled during the normal off periods of the power switches and, if any one of the sampled voltages is below a predetermined threshold level, the power supply is shut



down. A trouble-shooting circuit is included so that when a shutdown occurs due to a power switch short circuit failure, the faulty power switch can be quickly located and replaced.

3,627,968

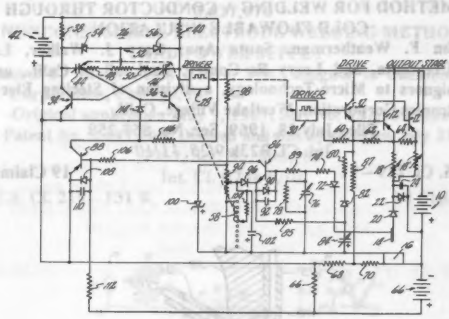
GAP SHORT CIRCUIT PROTECTIVE SYSTEM FOR ELECTRICAL DISCHARGE MACHINING

Kurt H. Sennowitz, Royal Oak, Mich., assignor to Elox Inc., Troy, Mich.

Continuation-in-part of application Ser. No. 723,726, Apr. 24, 1968, now abandoned. This application Aug. 21, 1969, Ser. No. 851,952

Int. Cl. B23b *1/08*

U.S. Cl. 219—69 C **7 Claims**



A circuit is provided to sense gap condition for impending or actual short circuit condition. Responsive to such condition, a portion of the drive voltage for the gap output switch is fed back, stored, amplified and applied to control the circuit pulser to narrow pulse on-time. Additionally, a means is provided for varying the cutoff reference voltage conjointly with change in frequency being made to the pulser.

3,627,969

WELDING DEVICE FOR ELECTRIC CONTACT ELEMENTS

Heinz Finzer, Lindenmatte 16, Sackingen, Germany

Filed June 4, 1970, Ser. No. 043,362

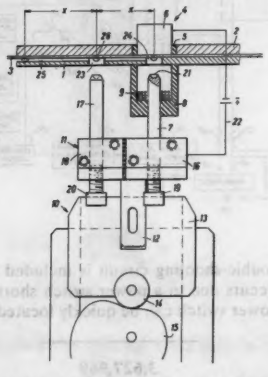
Claims priority, application Germany, June 12, 1969, P 19 29 787.1

Int. Cl. B23k *9/12, 11/00*

U.S. Cl. 219—79 **7 Claims**

A welding device for electric contact elements comprises a vertically slidable feed electrode having a pellet uptake

recession in the upper tip thereof. Positioned around the feed electrode is a pellet magazine containing welding pellets. At the lower limit of vertical travel of the feed electrode, the upper tip of the feed electrode is positioned relative to the pellet magazine to permit a welding pellet to fall into the pellet uptake recession. The welding pellet is then carried upwardly by the feed electrode until it reaches the upper limit



of travel of the feed electrode where the pellet is pressed against support material held in place by a counter electrode. The pellet is then welded onto the support material. After completion of the welding operation, the feed electrode is moved vertically downward to permit uptake of another pellet, and the feed material is moved a predetermined distance to expose a new unwelded surface.

3,627,970

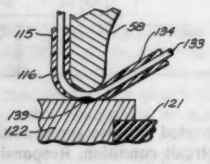
METHOD FOR WELDING A CONDUCTOR THROUGH COLD FLOWABLE INSULATION

John F. Weatherman, Santa Ana; Gary J. Walker, La Crescenta, and Larry R. Conley, Simi, all of Calif., assignors to Micro-Technology, a division of Sterling Electronics Corporation, Westlake Village, Calif.

Filed July 28, 1969, Ser. No. 857,258

Int. Cl. B23k *9/28, 11/10*

U.S. Cl. 219—91 **19 Claims**



A conductor, surrounded with cold flowable insulation, is welded to a terminal pin, e.g., by engaging the conductor and the pin between a pair of unheated welding electrodes. The electrodes are urged together with a force which reaches a value greater than a desired welding force value and is sufficient to cause the insulation to undergo cold flow out of a path between the electrodes via the conductor and the pin, thereby to render the path conductive. The force applied to the electrodes is then decreased to the desired welding force value and a pulse of welding current is passed along the conductive path when the desired force value is achieved. The current pulse is applied as the force applied to the electrodes decreases and is completed, and the molten metal formed by the current pulse is solidified, before such force is completely removed. The conductor is supplied through a passage formed in one of the electrodes.

3,627,971

METHOD CONTINUOUS INSPECTION OF THE QUALITY OF A WELD OBTAINED BY THE ELECTRON BEAM PROCESS

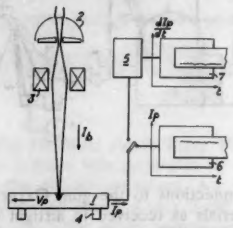
Marc Boncoeur, Paris; Jean-yves Marhic, Fresnes, and Michel Rapin, Paris, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Oct. 24, 1969, Ser. No. 869,198

Claims priority, application France, Oct 25, 1968, 171,533; June 20, 1969, 6920832

Int. Cl. B23k *9/00*

U.S. Cl. 219—121 EB **6 Claims**



A method of continuous quality inspection of a weld formed by electron bombardment of the part to be welded or target by means of an incident electron current I_b which is subdivided into a current I_p which penetrates into the target and a reflected current I_R, wherein one of the two electron currents between which the incident current I_b is distributed is recorded graphically as a function of the time which has elapsed since the beginning of the welding operation after being subjected if necessary to derivation as a function of time, and wherein the anomalies observed in the recording curve make it possible to detect weld flaws.

3,627,972

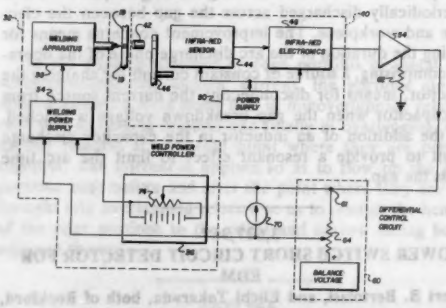
WELD CONTROL

William F. Iceland, Los Alamitos, and Donald E. Reinhart, Los Angeles, both of Calif., assignors to North American Rockwell Corporation

Continuation of application Ser. No. 759,459, Sept. 12, 1968, now abandoned. This application Jan. 30, 1970, Ser. No. 007,392

Int. Cl. B23k *9/12*

U.S. Cl. 219—124 **4 Claims**



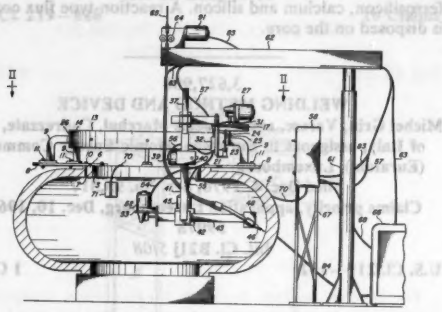
This disclosure relates to welding, and provides improved welding control by monitoring the heat radiations emitted at the weld area; the amount of these radiations indicating the condition of the weld puddle and its penetration through the workpiece. A new approach integrates the heat flux from a relatively large viewing area, and provides welding control that is far superior to that obtained by prior art systems.

3,627,973

SUCCESSIVE AUTOMATIC DEPOSITION OF CONTIGUOUS WELD BEADS UPON NONPLANAR SURFACES

Edward E. Smith, Upper St. Clair Township, Allegheny County, Pa., assignor to Teledyne, Inc., Los Angeles, Calif.

Filed June 24, 1970, Ser. No. 49,358
Int. Cl. B23k 9/12
U.S. Cl. 219—125 R 13 Claims



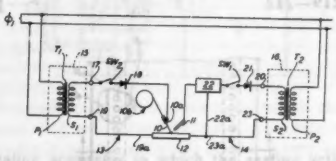
Method and apparatus for automatic control of welding means throughout the continuous application of a plurality of generally horizontal contiguous weld beads upon a nonplanar surface. The surface may be irregularly curved in the direction traversed generally horizontally by the welding means, as the worn inner surface of a dredge pump housing. The welding means may be supported and moved generally horizontally along the surface in successive welding passes between predetermined points. Provision is made for automatic reversal of the direction of welding when the welding means complete a weld pass at either of the predetermined points. At each weld direction reversal point the welding means are automatically repositioned with respect to the surface to a new effective welding position by motorized shifting of the welding means in predetermined direction and extent at least one of horizontally, vertically and angularly. Such motorized shifting is programmed to produce welding conformance of the welding means to the surface during the deposition of the plurality of generally horizontal contiguous weld beads without welding operator attention.

3,627,974

AVOIDANCE OF CURRENT INTERFERENCE IN CONSUMABLE CONTACT HOT WIRE ARC WELDING

Neil J. Normando, Livingston, and Willis C. Pierce, Jr., Murray Hill, both of N.J., assignors to Air Reduction Company, Incorporated, New York, N.Y.

Filed May 9, 1969, Ser. No. 823,304
Int. Cl. B23k 9/10
U.S. Cl. 219—131 R 4 Claims



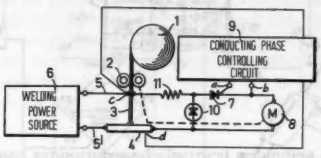
Arc-working apparatus with multiple current-carrying electrodes including in one embodiment a tungsten cathode-type arcing electrode, a workpiece, and a continuously fed hot wire electrode in electrical contact with the workpiece for depositing metal at the arc-heated area. Time-spaced current pulses for melting the contacting tip of the hot wire electrode alternate with time-spaced pulses of the arcing current for avoiding interaction of the respective pulsing magnetic fields and arc interference; in other embodiments more than two arcing electrodes and a common workpiece arc connected to current time-sharing circuits for avoiding magnetic field interaction and arc interference.

3,627,975

ARC-WELDING APPARATUS

Hisao Goto, Osaka-fu, Japan, assignor to Osaka Transformer Co., Ltd., Osaka-fu, Japan

Filed June 3, 1969, Ser. No. 830,016
Claims priority, application Japan, June 3, 1968, 43/37505
Int. Cl. B23k 9/10
U.S. Cl. 219—131 F 4 Claims



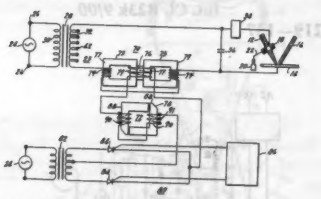
In short circuit transfer arc welding, from among the arc voltages generated during each arcing period, those portions irregularly generated are eliminated and, subsequently, only those voltages corresponding to the arcing time are detected and, further depending upon the detected voltage, the motor for feeding the welding electrode is driven so as to feed the welding electrode that an adequate speed so as to enable the welding work to provide a uniform and acceptable final weld through the entire welding operation.

3,627,976

NONCONSUMABLE ELECTRODE WELDING METHOD AND POWER SUPPLY

James B. Stearns, Elm Grove, Wis., assignor to Chemetron Corporation, Chicago, Ill.

Original application May 9, 1967, Ser. No. 637,169, now Patent No. 3,497,769. Divided and this application July 31, 1969, Ser. No. 846,502
Int. Cl. B23k 9/10
U.S. Cl. 219—131 R 14 Claims

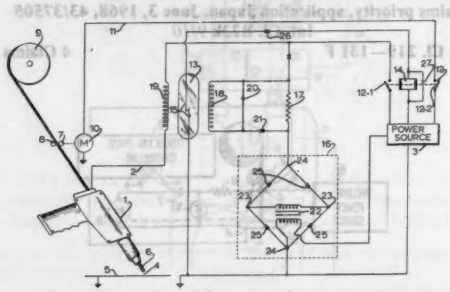


A welding power supply suitable for nonconsumable electrode, alternating current welding at high currents, for example, welding currents exceeding 250 amperes. The power supply includes a means to unbalance the alternating current wave in a controlled manner so that the alternate half-cycles of one direction of current are greater in magnitude than the alternate half-cycles of the other direction of current. The power supply also includes a means for controlling the electric pinch effect on the arc to further facilitate high-current welding.

A method for nonconsumable electrode, alternating-current welding at high-welding currents. The method includes the step of controlling the unbalance of the current wave so

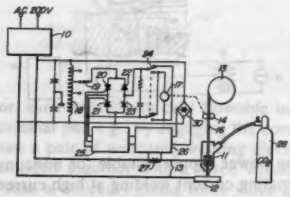
that the alternate half-cycles of one direction of current are greater in magnitude than the alternate half-cycles of the other direction of current, within prescribed limits, and the step of controlling the electric pinch effect on the arc.

3,627,977
ARC POWER SOURCE
Bernard J. Aldenhoff, Oconomowoc, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.
Filed Nov. 13, 1969, Ser. No. 876,446
Int. Cl. B23k 9/10
U.S. Cl. 219—131 F 7 Claims



A touch start apparatus initiates and stops the welding arc in a consumable arc-welding process. The electrode touching the workpiece energizes a starting coil connected in series with a single-phase, full-wave rectifier and a diode in parallel with the welding supply and closes a reed switch to connect the power supply to the welding process. Welding current through a second coil normally maintains the switch closed and back-biases the diode to effectively open the starting circuitry. The starting coil has a capacitor in parallel with the coil and provides a holding current to the coil and holds the switch closed during the starting transition and after the opening of the starting circuitry.

3,627,978
AUTOMATIC ARC WELDING METHOD
Tadashi Endo; Mitsuhiro Sakagami, both of Funabashi-shi; Hiroshi Nomura; Masamichi Suzuki, and Takeshi Araya, all of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 1, 1969, Ser. No. 811,825
Int. Cl. B23k 9/00
U.S. Cl. 219—137 3 Claims

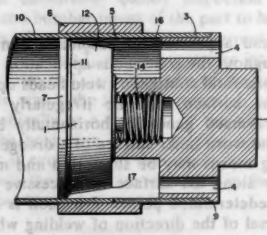


An automatic arc welding method characterized by using an AC power source having a slowly falling characteristic close to a constant voltage characteristic, selecting the arc voltage and welding current so that the mode of transfer of molten metal from an electrode wire to a base metal becomes pure spray-type one or spray-type one accompanied by periodic short circuit, and automatically feeding said electrode wire, thereby depositing the molten metal of said wire onto said base metal.

3,627,979
WELDING ELECTRODE
Joseph F. Quaas, Island Park, N.Y., assignor to Eutectic Corporation, Flushing, N.Y.
Filed Mar. 23, 1970, Ser. No. 22,008
Int. Cl. B23k 35/22
U.S. Cl. 219—146 6 Claims

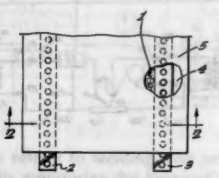
This invention relates to a welding electrode for depositing a highly wear-resistant surface layer upon a base metal. The welding electrode has a core made up with a mild steel sheath filled with tungsten carbide, chromium, manganese, ferrosilicon, calcium and silicon. A reaction-type flux coating is disposed on the core.

3,627,980
WELDING METHOD AND DEVICE
Michel Grin, Varese, and Francois Marchal, Cadrezzate, both of Italy, assignors to European Atomic Energy Community (Euratom), Luxembourg
Filed Dec. 4, 1970, Ser. No. 95,317
Claims priority, application Luxembourg, Dec. 10, 1969, 59978
Int. Cl. B21j 5/08
U.S. Cl. 219—152 1 Claim



A centering device is detachably secured to the outside surface of the plug which is to be magnewelded in the end of a tube. The assembly comprising the plug and the centering device is then inserted in the tube until the outside surface of the plug reaches a position adjacent a circumferential notch on the tube. Current is then passed through a magnewelding coil surrounding the tube. The tube contracts radially, is welded onto the plug and snaps off along the notch. It is then only necessary to detach the centering member from the plug to complete the welding operation.

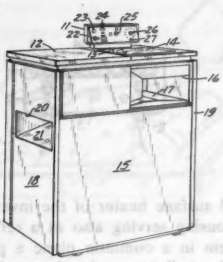
3,627,981
AREAL HEATING ELEMENT
Gerald Kuhn, Nurnberg, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft
Filed Nov. 5, 1969, Ser. No. 874,201
Claims priority, application Germany, Nov. 9, 1968, Jan. 25, 1969, Mar. 20, 1969; P 18 08 022.3, P 19 03 799.1, P 19 14 17.4
Int. Cl. H05b 1/00
U.S. Cl. 219—212 19 Claims



An areal heating element is disclosed in which the resistive portion is established by a polyester fleece contacting metal tapes as current lead-ins. The arrangement is lined with insulation layers, e.g., fiber fleeces or plastic sheets. The latter ar-

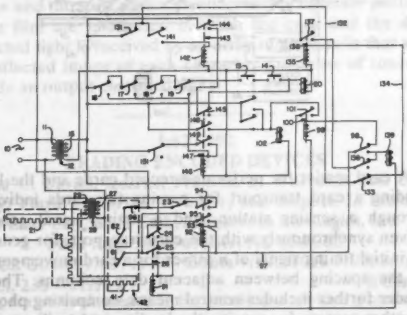
rangement can be clad in a grounded metal foil. The insulating layers are bonded to the polyester fleece and to the tapes by adhesive or through heat sealing.

3,627,982
COPYING MACHINE AND METHOD
Burt K. Sagawa, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Apr. 9, 1969, Ser. No. 814,545
Int. Cl. G03g *15/06*
U.S. Cl. 219—216 **10 Claims**



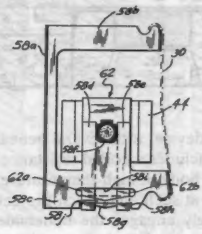
Efficient utilization of photosensitive intermediate and production of copies at a high rate of speed are accomplished in an automatic copying machine employing a delayed development copying method.

3,627,983
SELF-CLEANING HEATING ELEMENT FOR HEAT-SEALING APPARATUS
Lenox K. Pickering, Morristown, N.J., assignor to Charles Beseler Company, East Orange, N.J.
Filed Sept. 9, 1969, Ser. No. 856,418
Int. Cl. H05b *1/00*
U.S. Cl. 219—243 **8 Claims**



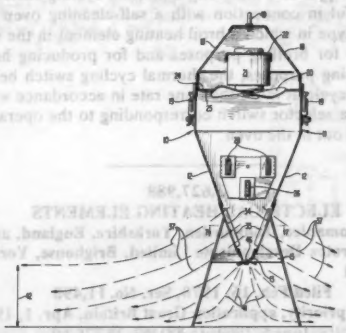
Heat-sealing apparatus in which the sealing action is initiated by contact of the heating element with the article to be sealed and terminated by a temperature-sensitive switch which causes the heating element to be removed from the article to be sealed. Further heat is applied to the heating element after it is removed from the article to be sealed in order to "burn-off" any residue. This self-cleaning action is terminated by a second temperature-sensitive switch.

3,627,984
COMBINED SUPPORT AND GROUND CLIP FOR HEATER ELEMENTS
William A. Bollinger, Augusta, S.C., assignor to Federal Pacific Electric Company, Newark, N.J.
Filed Dec. 8, 1969, Ser. No. 883,106
Int. Cl. F24h *7/00*
U.S. Cl. 219—365 **12 Claims**



A combined supporting and electrical grounding structure is incorporated in a baseboard electric heater. The tube of a fin-and-tube elongated heating element is supported on a bracket. The tube is anchored firmly to the bracket by an inverted-U locking plate that has a pair of legs with offset portions extending across an edge of the support bracket. Adjacent to that edge of the bracket there is a slot into which a screwdriver can be inserted and twisted for deforming the bracket, to tighten the locking plate firmly.

3,627,985
FORCED AIR ELECTRIC HEATER UNIT FOR POULTRY BROODER
Freeman M. Hostetler, Rte. 1, Dundee, Ohio
Filed Mar. 10, 1970, Ser. No. 18,220
Int. Cl. A01k *31/18*; F24h *3/04*
U.S. Cl. 219—370 **10 Claims**

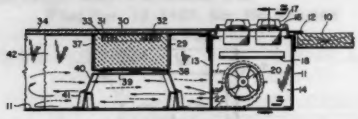


A compact, efficient and self-contained air heater unit for commercial poultry brooders provides an accurately controlled layer of moving warm air near floor level where the young birds habitate. The heater unit features an overhead down draft blower and heating elements which are readily removable in the region between the blower and the air-directing louvers in the bottom portion of the tapered heater housing. A plurality of the heater units will provide an even blanket of warm air over the entire floor area of a large brooder building.

3,627,986
ELECTRIC SMOOTH TOP RANGE

Carl L. Anderson, Shiloh, Ohio, assignor to The Tappan Company, Mansfield, Ohio

Filed Oct. 6, 1969, Ser. No. 863,926
Int. Cl. H05b *3/68, 3/06*
U.S. Cl. 219—460 **2 Claims**

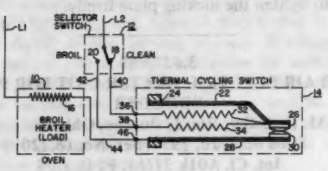


Each heating device, with several beneath a common glass-ceramic plate, includes a coiled resistance wire in a groove in an end face of a body of high-temperature insulation having a peripheral band at such end which projects above the groove area and sealingly engages the underside of the plate. The devices are in a rough-in box on elevated supports and a blower circulates ambient air over the same for cooling.

3,627,987
CONTROL FOR COOKING APPARATUS

Calvin J. Holtkamp, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 25, 1969, Ser. No. 819,193
Int. Cl. H05b *1/02*
U.S. Cl. 219—511 **5 Claims**

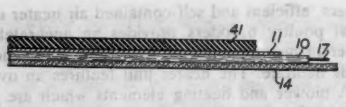


Control apparatus including a thermal cycling switch especially useful in connection with a self-cleaning oven of the pyrolytic type in which a broil heating element in the oven is used both for broiling purposes and for producing heat for heat-cleaning purposes, the thermal cycling switch being arranged to cycle at more than one rate in accordance with the setting of a selector switch corresponding to the operation to be carried out in the oven.

3,627,988
ELECTRICAL HEATING ELEMENTS

Charles Romaniec, Todmorden, Yorkshire, England, assignor to Electrotex Developments Limited, Brighouse, Yorkshire, England

Filed Feb. 16, 1970, Ser. No. 11,490
Claims priority, application Great Britain, Apr. 1, 1969, June 6, 1969; 16,881/69, 28,775/69
Int. Cl. H05b *3/36*
U.S. Cl. 219—529 **7 Claims**

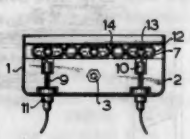


An electrical heating element, comprising an electrically conducting carded fibrous carbon web contacted by electrodes, a supporting layer of loosely woven fabric overlying and united to one face of said web and a fitted fabric surface layer overlying and united to the other face of said web, there being a finishing layer overlying the supporting layer.

3,627,989
INFRARED SURFACE HEATER

Albert Heidler, Erbach, Rheingau, and Wolf Dieter Klaus, Finthen kreis Mainz, both of Germany, assignors to Thermal Quarr-Schmelze G.m.b.H., Wiesbaden-Biebrich, Germany

Filed Dec. 11, 1969, Ser. No. 884,267
Int. Cl. H05b *3/18*
U.S. Cl. 219—553 **6 Claims**

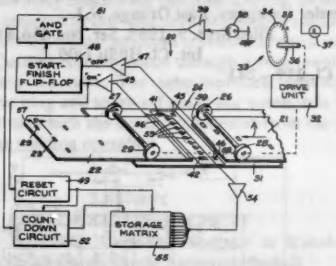


The infrared surface heater of the invention comprises a longitudinal housing serving also as a reflector and having mounted therein in a common plane a plurality of quartz tubes arranged parallel to each other and having dissimilar heating powers so as to radiate heat of different wavelengths.

3,627,990
SENSING MECHANISMS

Max E. Sallach, Chesterland, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Feb. 29, 1960, Ser. No. 11,613
Int. Cl. G06k *7/10*; G01n *21/30*
U.S. Cl. 235—61.11 E **11 Claims**

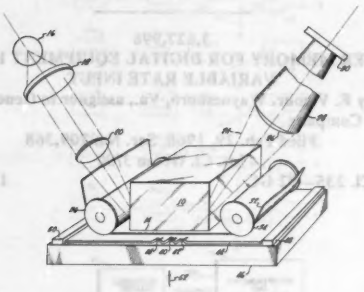


A card reader for perforated record cards and the like including a card transport for passing the cards individually through a sensing station, and a timing signal generator, driven synchronously with the card transport, for generating an initial timing signal of *n* pulses for a card movement equal to the spacing between adjacent data columns. The card reader further includes control means, comprising photocells or other sensors for sensing the leading and trailing edges of each card, that develops a control signal indicative of the presence of a card at the sensing station. The control signal actuates a gate to supply the initial timing signal to a countdown circuit, having a countdown factor of $1/n$, only when a card is in the sensing station. The countdown circuit develops a second timing signal comprising a series of pulses timed to coincide with movement of each data column on the card past a sensing position in the sensing station, timing the reading of data from the card. A reset circuit, actuated by the control signal, resets the countdown circuit each time a new card enters the sensing station.

3,627,991
PATTERN READER

Horace A. Beall, Santa Ana, and Visvaldis A. Vitols, Orange, both of Calif., assignors to North American Rockwell Corporation

Filed Feb. 24, 1970, Ser. No. 13,554
Int. Cl. G06k *7/14*
U.S. Cl. 235—61.11 E **17 Claims**



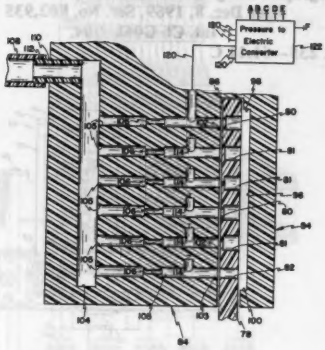
Embossed characters of a conventional credit card are read by an electrooptical arrangement that converts the characters into electrical signals. A transparent cylindrical disc is illuminated by a light beam that impinges upon a portion of its internal annular surface at an angle greater than the critical angle of the disc body to provide total internal reflection. A thin strip of flexible resilient film is positioned closely adjacent to but normally out of optical contact with the exterior of the annular disc surface. A card having at least a line of raised characters printed thereon is fed along a surface tangential to the disc so as to be pressed by a drive roller against the disc with the resilient film interposed between the disc and card. The raised pattern of characters on the card selectively presses the thin film into optical contact with the exterior annular surface of the disc thereby selectively frustrating the total internal reflection of light in a pattern determined by the raised pattern of card characters. The resilient film is fed to the periphery of the disc together with the feeding of the card to be read so that as the disc rotates and the card advances, successively different portions of the film are interposed between the card and the disc. Reflected light is received by an array of photocells that scan the reflected image of each character a number of times to provide an output electrical signal.

3,627,992
READING ENCODED DEVICES

Ronald C. Davies, Kearns; Franklin D. Wareham, Salt Lake City; Floyd L. Larson, Granger, and Stephen L. Stumph, Salt Lake City, all of Utah, assignors to Bio-Logics, Inc.

Filed Aug. 18, 1969, Ser. No. 854,353
Int. Cl. G01n *31/00, 11/00*; G06m *1/12*; G06k *7/02, 12/06*
U.S. Cl. 235—61.11 J **8 Claims**

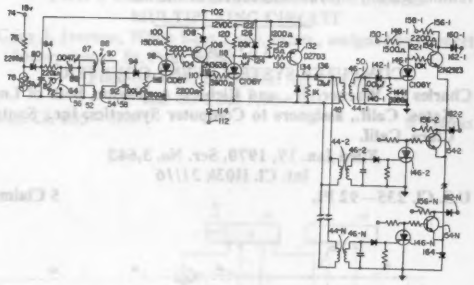
Apparatus and methods for reading a device presenting rows of encoded and unencoded sites, each row having a control site and coded information at the other sites, the apparatus including a reading head, with a plurality of fluidic sensors, and a device-receiving lift assembly for relatively displacing the reading head and the encoded device. The rows of sites are successively fluidically sensed, with a given row being sensed after the control site of the row is correctly positioned in the reading head and electrical signals, derived from the fluidic signals and representing the code of each row, are converted to Binary Coded Decimal (BCD) data format and stored in a circulating shift register in a row-by-row fashion so that the stored information can be subsequently converted into human readable form, if desired. A fluidic circuit governs the timing and rate of relative displacement of the reading head and the encoded device and sequences the fluid flow to the fluidic sensors.



3,627,993
CONTROL SYSTEM

Irving B. Cooper, Jr., Marblehead, Mass., assignor to Notifier Company, Lincoln, Nebr.

Filed Nov. 20, 1969, Ser. No. 878,369
Int. Cl. G06k *7/08*; H04q *1/30*; G06k *7/00*
U.S. Cl. 235—61.11 H **7 Claims**

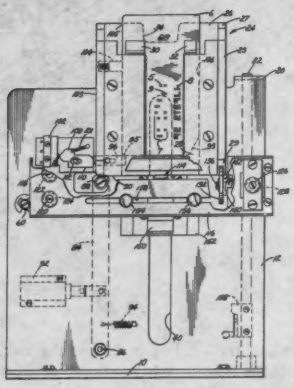


A card reader has a card sensing area; a switch adjacent the card sensing area responsive to the insertion of a card into the card sensing area; at least one control sensor and a plurality of data sensors in the sensing area; first circuitry responsive to the operation of the switch in response to the insertion of a card in the sensing area for applying a pulse to the control sensor, the control sensor producing an output signal in the presence of a copper disc on the card disposed adjacent the control sensor; second circuitry, including a solid-state switch, responsive to the output signal of the control sensor for interrogating the data sensors; and readout circuitry responsive to the output signals of the data sensors as a function of indicia on the car for generating data signals for application to an output device.

3,627,994
CODE SENSING DEVICE FOR CIRCUIT CONTROL

Max E. Sallach, Chesterland; Russell A. Hansen, Chardon; Donald N. Heisner; Bryce G. Thornton, both of Mentor, and Charles F. Weber, Euclid, all of Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Dec. 8, 1969, Ser. No. 882,935
Int. Cl. G06k 7/04
U.S. Cl. 235—61.11 C 7 Claims

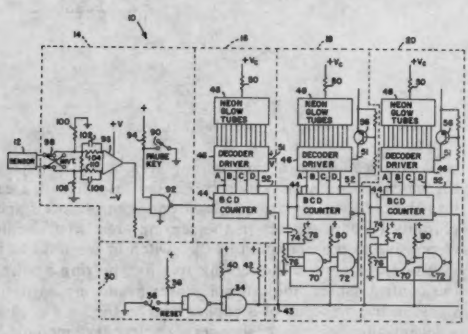


A device for sensing physical variations of a data card surface includes a carriage for retaining and transporting a data card through a sensing cycle. The carriage is movable in a path from a home position to an actuated position and back to the home position. Sensing means is provided adjacent the carriage path and is urged into contact with the data card surface in response to movement of the carriage from the actuated to the home position. The sensing means establishes a circuit control, as a function of detecting the surface variations on the data card, for directly controlling, for example, a remote station information center or the like.

3,627,995
COMPUTER SYSTEM EVENT COUNTER

Charles D. Warner, Jr., and Richard A. Taylor, both of Los Gatos, Calif., assignors to Computer Synectics, Inc., Santa Clara, Calif.

Filed Jan. 19, 1970, Ser. No. 3,643
Int. Cl. H03k 21/16
U.S. Cl. 235—92 PL 5 Claims

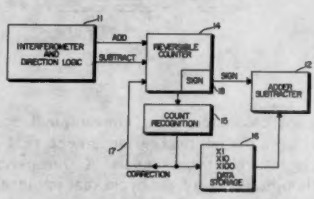


An electronic systems event counter network for counting the number of times a computing system event occurs by monitoring a system signal line. The network is adapted to be attached to a line of a logic family in the computing system and senses signals on the line while providing isolation from the system. Toward this end, the events counter network comprises a sensor for detecting the presence of electronic signals. A plurality of counter stages joined in tandem count the number of occurrences in the electronic signals and present the same in decimal form for display on a control panel. The sensor is attached to a line of a logic family within the host computing system with the selected line being determined according to the event to be sensed. The sensor provides isolation from the host system, thereby avoiding imposition of line loading or degrading system performance.

3,627,996
BUFFER MEMORY FOR DIGITAL EQUIPMENT HAVING VARIABLE RATE INPUT

Hervey E. Vigour, Waynesboro, Va., assignor to General Electric Company

Filed Feb. 29, 1968, Ser. No. 709,368
Int. Cl. G06m 3/00
U.S. Cl. 235—92 GC 19 Claims



A digital buffer memory is described for accumulating the variable rate, reversible polarity, digital fringe count signal pulses of an interferometer position gauging device. The buffer memory comprises a digitally operable, reversible decade counter for accumulating a count indicative of the net sum of the input fringe count pulses supplied from an interferometer position gauging device. A count recognition circuit is coupled to the decade counter for classifying the account accumulated in the reversible counter within the scaling ranges of units, tens or hundreds. Readout circuits are responsive to the count recognition circuit for reading out the count accumulated in the decade counter in scales of units, tens or hundreds as determined by the setting of the counter recognition circuit, and count correction feedback circuits are provided which are responsive to the count recognition circuit and are coupled back to the reversible counter for correcting the count registered in the reversible counter so that the contents of the counter correctly represent only the remaining unprocessed input fringe count signal pulses.

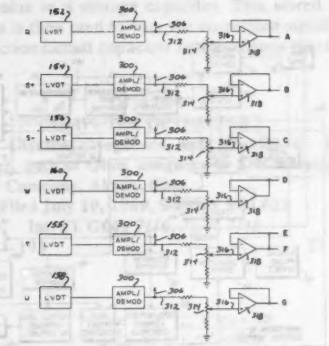
3,627,997
TURBINE VANE PREDICTION AND CLASSIFICATION GAGE AND GAGING METHOD

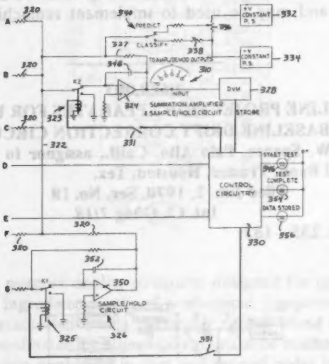
Ronald L. Samuels, Palos Verdes Peninsula; William Pennington, Jr., Los Angeles; Charles L. Mueller, Harrisburg, and Wallace M. Porter, Redondo Beach, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Nov. 13, 1969, Ser. No. 876,395
Int. Cl. G06f 15/46
U.S. Cl. 235—151.3 22 Claims

An instrument and method for prediction and classification gaging of production turbine vanes without distortion of the vanes. In its prediction-gaging mode, the instrument gages selected airfoil dimensions of a production turbine vane and master and provides a figure of merit readout representing the difference between the effective class values of the master and vane resulting from the difference, if any, in their corresponding airfoil dimensions. This figure of merit is converted to an angle at which the class surface of the vane must

be machined to provide the vane with a selected class value. In its classification-gaging mode, the instrument gages the selected airfoil dimensions and the class face angle of the





machined vane and provides a readout representing the actual class value of the machined vane. The airfoil dimensions and class surface are gaged with electrical transducer in such a way that there is no distortion of the master or vane.

3,627,998

ARRANGEMENT FOR CONVERTING A BINARY NUMBER INTO A DECIMAL NUMBER IN A COMPUTER

Goran Anders Henrik Hemdal, Tyreso, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

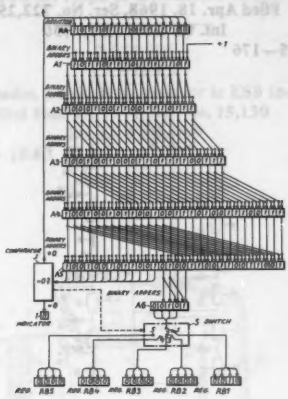
Filed Nov. 24, 1969, Ser. No. 879,290

Claims priority, application Sweden, Dec. 20, 1968, 17,538/1968

Int. Cl. G06f *5/02*; H03k *13/24*

U.S. Cl. 235—155 **1 Claim**

A binary-to-decimal converter comprises a plurality of cascaded adding means having order numbers n=1,2,3... wherein the binary number is initially received by the adding means with order number 1 and proceeds serially through the adding means. The first adding means adding 1 to the binary



number and each subsequent adding means multiplying the result from the previous adding means by

$$(1+2^{2^{(n-1)}})$$

Further means return the result from the last adding means to the input of the first adding means until such result is zero. For each such iteration certain bit positions of the result are stored, such bit positions representing the succession decimal digits of the conversion.

3,627,999

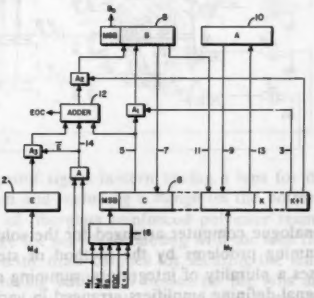
TWO'S COMPLEMENT NEGATIVE NUMBER MULTIPLYING CIRCUIT

Gary J. Iverson, White Bear Lake, Minn., assignor to Comcet Incorporated, St. Paul, Minn.

Filed Nov. 28, 1969, Ser. No. 880,653

Int. Cl. G06f *7/38*, *7/39*

U.S. Cl. 235—164 **3 Claims**

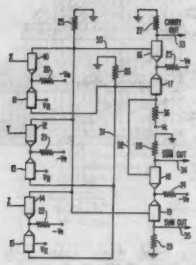


A two's complement negative number multiplying circuit in which no complementing of the multiplier or multiplicand is required, no special cases need be detected, no complementing of the result is required and fewer transfer paths are needed.

3,628,000
DATA HANDLING DEVICES FOR RADIX "N+2" OPERATION

Leonard Weiss, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 18, 1968, Ser. No. 722,251
Int. Cl. G06f 7/38, 7/50
U.S. Cl. 235—176 6 Claims

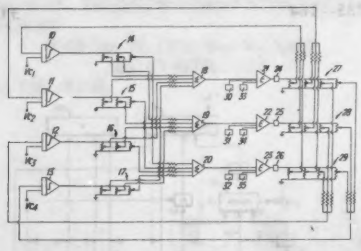


Data-handling devices for receiving input binary information, converting the input information into internal information in a number system having a radix greater than two, and performing Boolean logic operations on this internal information to generate a binary output representing a Boolean logic function of the input signals.

3,628,001
LINEAR PROGRAMMING ANALOGUE COMPUTER WITH AUTOMATIC MEANS FOR OPTIMIZING

William J. Niblock, Eire, Ireland, assignor to Qeleq Limited, Dublin, Ireland

Filed Sept. 3, 1969, Ser. No. 854,997
Claims priority, application Great Britain, Sept. 4, 1968, 42,125/68
Int. Cl. G06g 7/34
U.S. Cl. 235—180 8 Claims

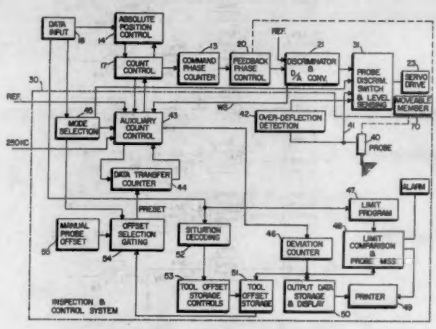


An analogue computer arranged for the solution of linear programming problems by the method of steepest ascents comprises a plurality of integrators, summing amplifiers and error-signal-defining amplifiers arranged in various interconnected signal-conducting paths and the signal-representative of the objective function is optimized automatically by deriving a correction signal from the signal-conducting paths and adding the correction signal to a signal of constant amplitude. The correction signal may be proportional to the maximum absolute value of error signal or the maximum positive or negative error signal appearing at the outputs of the error-signal-defining amplifiers.

3,628,002
ON-MACHINE INSPECTION SYSTEMS

Earl E. Meese, Waynesboro, and James C. Kenyon, Lyndhurst, both of Va., assignors to General Electric Company

Filed Nov. 21, 1967, Ser. No. 684,776
Int. Cl. G06f 15/46; B23q 15/04
U.S. Cl. 235—151.11 14 Claims

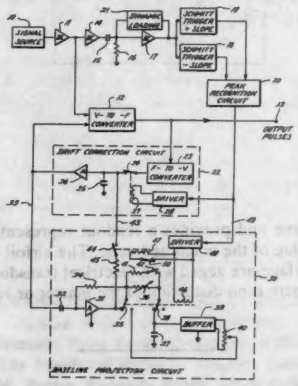


A system for inspecting work as part of the program of an automatically controlled machine tool wherein the deviation between the actual dimensions and the desired dimensions is stored and may be used to implement remachining operations.

3,628,003
BASELINE PROJECTION APPARATUS FOR USE WITH BASELINE DRIFT CORRECTION CIRCUITS

David W. Spence, Palo Alto, Calif., assignor to Capital National Bank, Trustee, Houston, Tex.

Filed Jan. 2, 1970, Ser. No. 18
Int. Cl. G06g 7/18
U.S. Cl. 235—183 13 Claims



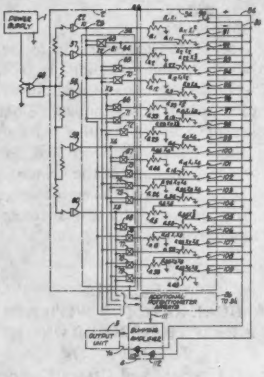
An analytical measurement signal having recurrent data fluctuations which extend from a baseline value is supplied to a voltage-to-frequency converter which produces output pulses having a repetition rate proportional to the amplitude of the measurement signal. A drift correction circuit is responsive to these pulses for sensing baseline drift and supplying to the input of the voltage-to-frequency converter a correction signal for minimizing such baseline drift. During the occurrence of a data fluctuation, a portion of the drift correction circuit is disabled and a storage capacitor in such circuit supplies a constant correction signal to the voltage-to-frequency converter. A baseline projection circuit is coupled to the drift

correction circuit for modifying the constant correction signal used during the occurrence of a data fluctuation in accordance with the estimated baseline drift expected to occur during such time interval. Such baseline projection circuit includes differentiating circuit means for measuring the rate of change of the correction signal just prior to the occurrence of a data fluctuation and means for storing the measured rate of change value in a storage capacitor. This stored rate of change value is then used to vary the correction signal stored by the correction circuit capacitor in accordance therewith.

3,628,004
COMPUTER OPTIMIZER

William E. Claxton, Mogadore, and Harold C. Holden, Manchester, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed July 10, 1969, Ser. No. 840,622
Int. Cl. G06g *7/16, 7/36, 7/48*
U.S. Cl. 235—193 **23 Claims**

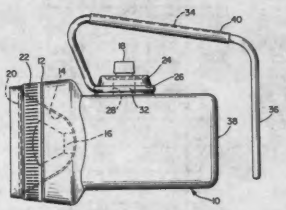


A special purpose analog computer designed for optimization of the ingredient levels of a chemical compound. The physical characteristics of a particular rubber blend may be closely approximated by a general empirical or mathematical model equation expressed in first and second order terms of the ingredients. By analysis of raw experimental data relating to the physical characteristics of interest, a different set of influence coefficients for the general equation terms may be determined for each physical characteristic, whereby a number of special model equations are obtained. In the preferred embodiment of the invention an eight-channel analog system is provided for simultaneously evaluating eight special model equations, expressed in terms of five ingredients. The set of influence coefficients for the terms of each special model equation are scaled to values less than unity and are dialed upon a separate bank of potentiometers of the analog computer. Five variable factor dials are provided to control the voltage level or desired value of the ingredients which may be altered to simulate various combinations of ingredients. The analog computer then instantly computes eight outputs which represent the response values of the eight physical characteristics for the selected blend of ingredients. A four-oscilloscope readout is provided utilizing the eight outputs and is programmed so that an ideal blend results in the convergence of the four oscilloscope beams toward the center of the readout array. The computer has an automatic search mode of operation to continuously vary the levels of the variable factors to automatically search through a range of factor levels to attempt to locate that combination of blend of ingredients which produces the best response. Also a combination search is provided wherein the variable factor levels are periodically changed only in the direction to achieve optimum results and thus the optimum blend of constituents may be determined by this combination search circuit. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,628,005
LANTERN

Nolan K. Rhoades, Beloit, Wis., assignor to ESB Incorporated

Filed Feb. 27, 1970, Ser. No. 15,130
Int. Cl. F21l *7/00*
U.S. Cl. 240—10.63 **2 Claims**

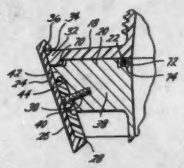


A lantern having a cantilevered handle swivelly mounted on the casing of the lantern is disclosed. The handle and casing are moveable relative to each other to any of a plurality of adjusted positions. A portion of the handle serves as a support for the lantern when used as such as well as a lens guard moved to a position in front of the lens of the lantern.

3,628,006
SIGNAL LANTERN

Samuel N. Sprunt; John E. Murphy; Harry J. Saenger, and Peter W. Higgins, all of Houston, Tex., assignors to Tideland Signal Corporation, Houston, Tex.

Filed Dec. 19, 1969, Ser. No. 886,477
Int. Cl. F21l *15/02*
U.S. Cl. 240—22 **6 Claims**



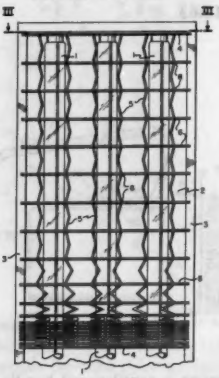
A weatherproof signal lantern having a lens for directing light therefrom and including a flange on the bottom and a base molded of fiberglass reinforced polyester resin plastic having a flange for sealably coacting with the lens flange. A plurality of plastic draw catches for securing the lens to the base and including additional bosses on the lens and base flanges whereby the lens and base are interchangeable with conventional type lantern lens and bases. The lens flange including a drip rail integral therewith extending downwardly and round the lens perimeter for limiting water entry into the interface between the lens and the base with an O-ring seal having a groove offset from the seal for bonding the O-ring from the side to prevent undue stress forces in the lantern. A plastic snap-in hinge which allows quick installation of a lens on a base.

3,628,007

CHECKERED GRID PREFERABLY FOR USE AS ANTIDAZZLE SCREEN AT FLUORESCENT TUBE FITTINGS

Rolf Gunnar Erland Rosenberg, 9 Lutzengatan, Stockholm, Sweden

Filed Oct. 14, 1969, Ser. No. 866,305
Claims priority, application Sweden, Oct. 16, 1968, 13948/68
Int. Cl. F21v *11/04*; F21s *1/06*
U.S. Cl. 240—46.09 8 Claims



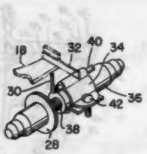
A collapsible antidazzle screen for use in connection with lighting fixtures includes a plurality of longitudinal strips foldable at spaced-apart points and a plurality of transverse strips connected to the longitudinal strips at fixed points, said transverse strips being placed upright in parallel and interconnecting with a plurality of longitudinal strips to form a bellowslike structure extendable in the longitudinal direction of the longitudinal strips.

3,628,008

BRAKE WEAR INDICATOR

Benjamin R. Lacey, 2743 North Ringgold St., Philadelphia, Pa.

Filed July 23, 1969, Ser. No. 843,980
Int. Cl. B60t *17/22*
U.S. Cl. 340—52 A 4 Claims



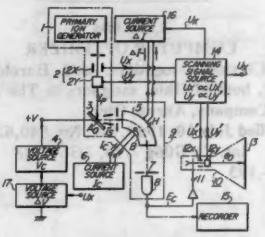
A brake wear indicator for use in a self-adjuster brake assembly which includes the actuator associated with a brakeshoe, with the actuator arm turning the adjusting screw from time to time to achieve the self-adjusting action. With the present invention there is provided a movable terminal that is moved from time to time by the actuator arm and a fixed terminal that is mounted on the brakeshoe. As the brake linings wear away, the actuator screw is caused by the actuator arm to be rotated from time to time and with each advance of the actuator screw the movable terminal of the present invention is advanced toward the fixed terminal. At a predetermined amount of wear of the brake lining the movable terminal comes into contact with the fixed terminal to close a circuit that turns on a warning light that is preferably located on the dashboard of an automobile to warn the driver that the time has come to replace the brake lining of the automobile.

3,628,009

SCANNING-TYPE SPUTTERING MASS SPECTROMETER

Hiroshi Doi, Ome; Hifumi Tamura, Hachioji, and Itiro Omura, Hino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 9, 1970, Ser. No. 53,481
Claims priority, application Japan, July 11, 1969, 44/54506
Int. Cl. H01j *39/36*
U.S. Cl. 250—41.9 ME 5 Claims



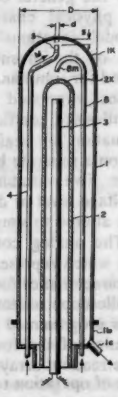
A scanning-type sputtering mass spectrometer comprising a primary ion-scanning unit including electrostatic-deflecting means and a secondary ion-analyzing unit including electrostatic-accelerating means, elecromagnetic-deflecting means and an ion collector. The accelerating voltage or the deflecting magnetic flux density is controlled in magnitude in synchronism with the scanning of the primary ion beam so as to let only ions of a particular mass-to-change ratio into the ion collector, irrespective of the displacement of the subject point of the secondary ion-analyzing unit.

3,628,010

PHOTOCHEMICAL REACTOR WITH NOZZLE MEANS TO SPRAY A REACTION LIQUID ON THE WALLS OF THE REACTOR

Niklaus Tarkoey, Oberwil, and Cesare Campana, Birsfelden, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed July 1, 1969, Ser. No. 838,205
Claims priority, application Switzerland, July 4, 1968, 9957/68
Int. Cl. H01j *37/00*
U.S. Cl. 250—43 6 Claims



A photochemical reactor has an upstanding hollow cylindrical section closed at its upper end by a hemispherical dome the interior surface of which forms a continuation of the interior surface of the cylindrical section. One or more

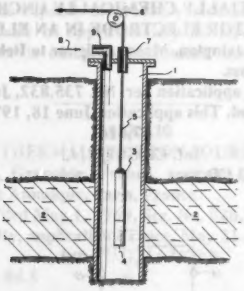
nozzles sprays a reaction liquid onto the dome to form a film thereon which moves down the interior wall of the cylindrical section. A light source is coaxially disposed in the cylindrical section and spaced from it to effect the photochemical reaction of the film. The cylindrical section may be rotated and/or longitudinally corrugated to provide a longer effective film path. The light source has a tubular lamp in a translucent or transparent envelope and means are provided for washing the outer surface of the envelope to remove contamination.

3,628,011

DETERMINING FORMATION PERMEABILITY BE MEANS OF REPEATED FLUID INJECTIONS AT DIFFERENT PRESSURES AND AFTER EACH INJECTION PRODUCING A NEUTRON ACTIVATION LOG

Richard E. Wyman, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 14, 1969, Ser. No. 850,126
Int. Cl. G01v 5/00
U.S. Cl. 250—43.5 3 Claims



A method for determining the permeability of a formation penetrated by a well using a neutron decay logging procedure. An aqueous liquid having a known neutron-capture cross section is first injected into the formation until the water saturation of the formation of interest is substantially 100 percent. Following the aqueous liquid, a viscous liquid having a known neutron-capture cross section which is different from the cross section of the aqueous liquid is injected at a low pressure. When equilibrium is reached, the concentration of the viscous liquid is measured using a neutron decay logging procedure. The injection of the viscous liquid is repeated using a higher pressure and the concentration of viscous liquid again measured. The injection pressure is increased in discrete steps and the concentration measured for each step until the fracturing pressure of the formation is approached. The concentration of viscous liquid versus injection pressure is plotted and used to determine the permeability of the formation.

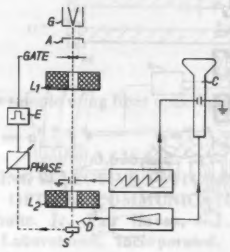
3,628,012

SCANNING ELECTRON MICROSCOPE FOR EXAMINING A REPETITIVELY VARYING PHENOMENON AT THE SURFACE OF A SPECIMEN

Graham Stuart Plows, 80 Brent Court, Hertfordshire, and William Charles Nixon, 2 Causewayside, San Causeway, Cambridge, both of England

Filed Apr. 3, 1969, Ser. No. 813,176
Int. Cl. H01j 37/28; H01j 37/22
U.S. Cl. 250—49.5 A 3 Claims

In time-sequential scanning electron microscopy in which an image is reconstructed for example on the screen of a cathode ray tube, rapidly varying phenomena having a cycle period much shorter are examined stroboscopically by gating the signal train, preferably the incident electron



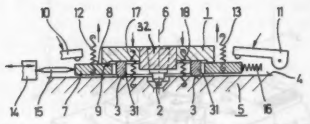
beam, in synchronism with the phenomenon and the image is built up from the resulting train of successive signals.

3,628,013

ADJUSTING DEVICE FOR CORPUSCULAR-BEAM APPARATUS

Hans-Gunther Heide, Berlin, Germany, assignor to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e. V., Gottingen, Germany

Filed Aug. 29, 1969, Ser. No. 854,089
Int. Cl. H01j 37/26
U.S. Cl. 250—49.5 B 12 Claims



A corpuscular-beam apparatus wherein a component, such as a diaphragm or specimen table, requires adjustment perpendicularly to the radiation axis of the apparatus. This component which requires such adjustment slidably engages a supporting surface which is normal to the radiation axis. An adjusting means, which can be actuated from the exterior of the evacuated apparatus, is provided for bringing about the required adjustment of the component. A clutch means is situated between this adjusting means and the component for transmitting movement from the adjusting means to the component only when the clutch means is in an engaged position. This clutch means can be displaced between its engaged position and a disengaged position where said clutch means prevents any transmission of movement from the adjusting means to the component.

3,628,014

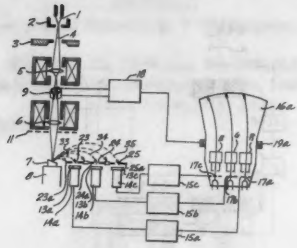
SCANNING ELECTRON MICROSCOPE WITH COLOR DISPLAY MEANS

Lee R. Grubic, Jr., Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 22, 1969, Ser. No. 887,693
Int. Cl. H01j 37/28, 37/22
U.S. Cl. 250—49.5 A 3 Claims

A scanning electron microscope and system wherein small surface potential differences are rendered visible as color shifts on a color CRT (cathode-ray tube) display device. A plurality of different surface potentials are detected respectively by scintillation detectors which are coupled to photomultipliers and then amplifiers. The amplifier output signals representative of several different means surface potentials at scanned points of the specimen are coupled respectively to the three signal control grids of a color CRT in the case of a three scintillating detector-three channel

system and the color combinations of the primary colors displayed are indicative of surface potentials in between the



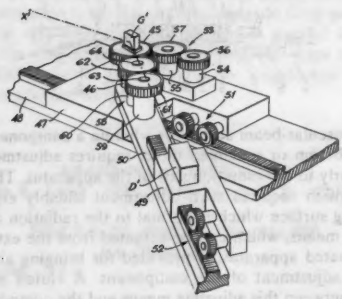
mean potentials thus making small differences of the specimen surface potential readily discernible to the eye as small color shifts.

3,628,015

SCANNING MECHANISM FOR USE IN AN X-RAY SPECTROMETER

Albert Franks, London, England, assignor to National Research Development Corporation, London, England

Filed Nov. 26, 1968, Ser. No. 779,142
Claims priority, application Great Britain, Nov. 29, 1967, 54,346/67
Int. Cl. G01n *23/22*
U.S. Cl. 250—51.5 **6 Claims**



In a spectrometer incorporating a radiation detector which is movable so as to follow the focal curve of a dispersive element such as a curved grating or crystal, the movement of the detector is brought about by appropriately coordinating the operation of two mechanisms which respectively drive the detector radially and angularly relative to the dispersive element.

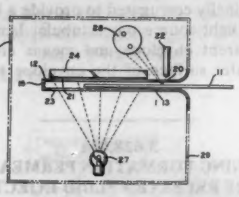
3,628,016

PHOTOELECTRIC READER FOR FLUORESCENT INK IMPRINTED CODED DOCUMENT

Robert M. Berler, Westport, Conn., assignor to Pitney Bowes-Alpex, Inc., Danbury, Conn.

Continuation of application Ser. No. 809,614, Mar. 24, 1969, now abandoned. This application Nov. 27, 1970, Ser. No. 93,470
Int. Cl. G01n *21/22*
U.S. Cl. 250—71 R **8 Claims**

An apparatus for reading intelligence contained on a document in the form of information printed with fluorescent ink. To accommodate the document to be read, the reader includes a slot comprising a pair of flat plates between which the document is inserted. Formed in the plates are apertures or windows over which the document is drawn; one window effects the readout; another verifies or approves the document. A fluorescent light source is directed through the readout window and an incandescent light source is directed



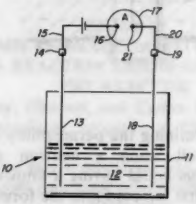
through the approval window. Aligned with the respective windows are light detector means comprising a plurality of photocells. A housing capable of substantially excluding light contains the document-receiving slot, the light source and photocell detector.

3,628,017

ULTRAVIOLET LIGHT-SENSITIVE CELL USING A SUBSTANTIALLY CHEMICALLY UNCHANGED SEMICONDUCTOR ELECTRODE IN AN ELECTROLYTE

Harry Lerner, Lexington, Mass., assignor to Itek Corporation, Lexington, Mass.

Continuation of application Ser. No. 735,832, June 10, 1968, now abandoned. This application June 18, 1970, Ser. No. 47,610
Int. Cl. G01j *1/42*
U.S. Cl. 250—83 CD **12 Claims**



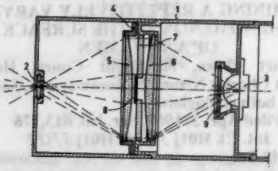
This disclosure relates to an ultraviolet light-sensitive cell which is useful for detecting and measuring the intensity of ultraviolet light. The cell comprises an electrolyte, a metal-containing semiconductor electrode and a counter electrode.

3,628,018

DEVICE FOR CONTROLLING THE ATTITUDE OF A SPACECRAFT BY MEANS OF AN ELECTRO-OPTIC MODULATOR

Francois Desvignes, Bourg La Reine, France, assignor to U. S. Philips Corporation, New York, N.Y.

Filed Nov. 25, 1969, Ser. No. 879,723
Claims priority, application France, Nov. 27, 1968, 175.530
Int. Cl. G01d *5/34*
U.S. Cl. 250—83.3 H **11 Claims**



An attitude scanning device for a spacecraft which is in a circular orbit about the earth, which device can be used dur-

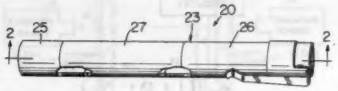
ing the coarse and the final determinations of this attitude. A bolometer receives the infrared radiation from the earth after this radiation has been modulated by an electro-optical modulator composed of sectors. The device enables the rolling and pitching errors to be simultaneously determined.

3,628,019

LOW-ENERGY DOSIMETER AND METHOD OF MAKING SAME

Thomas P. Jackson, 721 Springfield St., P.O. Box 893, Dayton, Ohio

Filed Mar. 13, 1969, Ser. No. 806,925
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 **19 Claims**



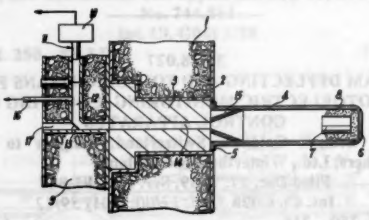
A reliable low-energy dosimeter, and method of making same, which is capable of precisely measuring radiation at low-energy levels of approximately 30 Kev. and less; yet, such dosimeter is easily manufactured using conventional equipment.

3,628,020

THERMAL NEUTRON SOURCE

Alain Briand, Grenoble, France, assignor to Commissariat A'L'Energie Atomique, Paris, France

Filed May 1, 1969, Ser. No. 820,733
Claims priority, application France, May 21, 1968, 152 624
Int. Cl. G21c *3/00*
U.S. Cl. 250—84.5 **8 Claims**



A temperature-controlled thermal neutron source for modifying the energy of neutrons supplied by a nuclear reactor core. A block of neutron-moderating material enclosed in a leaktight casing is placed within the reactor. The block casing forms an extension of a reactor shield plug which closes an access hole and is connected to an external vacuum pump via a passageway through the shield plug. The passageway serves as a guide for high-frequency waves which are transmitted from the exterior to the neutron-moderating block. The temperature of the block can thus be varied, thereby permitting a correlative variation in the energy of neutrons which traverse the block.

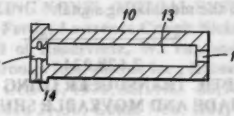
3,628,021

X-RAY COLLIMATOR HAVING A FIBER OPTIC LIGHT SOURCE THEREIN FOR ALIGNMENT PURPOSES

Angus C. MacDonald, 10 Spear Lane, Denville, N.J.

Filed May 25, 1970, Ser. No. 40,174
Int. Cl. G03b *41/16*
U.S. Cl. 250—105 **6 Claims**

X-ray collimator having a fiber optic light source attached thereto, and method for accurately aiming a collimated X-ray beam at a test sample using fiber optic light source.

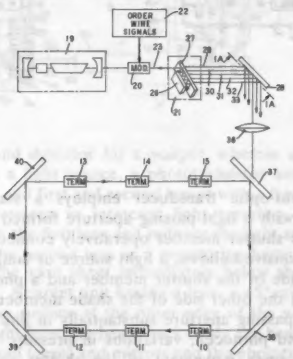


3,628,022

NONBLOCKING SELECTIVE SWITCHING SYSTEM FOR OPTICAL COMMUNICATION

Harry J. Schulte, Jr., Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Oct. 8, 1969, Ser. No. 864,663
Int. Cl. H04b *9/00*
U.S. Cl. 250—199 **16 Claims**



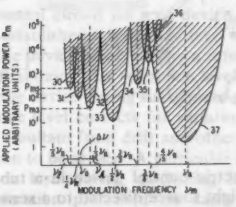
Carrier beams of coherent light are directed around a closed coupling loop having n terminals coupled thereto by selective light deflectors which divert a different beam from the loop at each terminal. The loop includes $n \times n$ spatially dedicated beam paths. Each terminal modulates its carrier beam and directs the modulated beam by way of the terminal deflector to one of $n-1$ different paths in the loop for one of the $n-1$ other terminals. Likewise, the deflector at each terminal directs to its terminal the modulated carrier beams from the $n-1$ other terminals.

3,628,023

METHOD AND APPARATUS FOR PULSE POSITION MODULATING SPONTANEOUSLY PULSING SEMICONDUCTOR LASERS

Thomas L. Paoli, Chatham, and Jose E. Ripper, North Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Dec. 1, 1969, Ser. No. 881,183
Int. Cl. H04b *9/00*; H01s *3/18*
U.S. Cl. 250—199 **16 Claims**



The output of a spontaneously pulsing semiconductor laser is pulse position modulated by amplitude modulating the in-

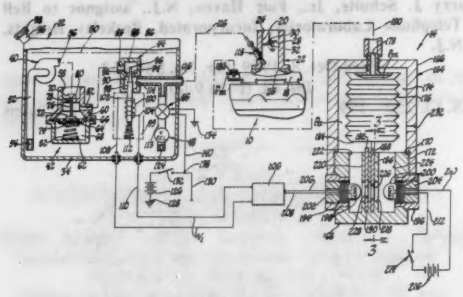
jection current while maintaining the frequency and power of the modulating signal so as to prevent phase-locking of the laser output to the modulating signal.

3,628,024

PHOTO-OPTIC TRANSDUCER USING APERTURED SHADE AND MOVEABLE SHUTTER

Michael F. Ciemochowski, Warren, Mich., assignor to Holley Carburetor Company, Warren, Mich.

Filed Apr. 13, 1970, Ser. No. 27,917
Int. Cl. F02m *7/00*
U.S. Cl. 250—215 **6 Claims**



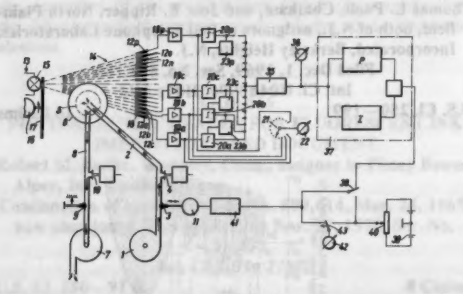
A photo-optic transducer employs a stationary shade member with a light-passing aperture formed therein and a moveable shutter member operatively connected to a pressure responsive bellows; a light source or lamp is positioned on one side of the shutter member and a photocell is positioned on the other side of the shade member so as to have the light-passing aperture substantially in line with the light source and photocell; variations in pressure sensed by the bellows causes movement of the shutter so as to in accordance therewith partially block the total area of said aperture in order to varyingly reduce the degree of passage of light from said source to the photocell thereby enabling the photocell to produce an output signal correlated to the pressure than sensed by the bellows.

3,628,025

PHOTOELECTRIC CONTROL DEVICE

Franz Kieferle, Weil am Rhein, Germany, assignor to Lonza Ltd., Basel, Switzerland

Filed Jan. 21, 1970, Ser. No. 4,583
Claims priority, application Switzerland, Jan. 24, 1969, 1041
Int. Cl. G01n *21/30*
U.S. Cl. 250—219 LG **5 Claims**



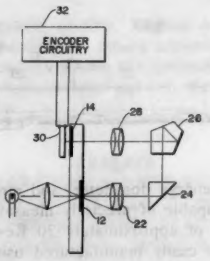
A photoelectric control device in a tube inflating device comprises a light source directed to a series of photoelectric elements each associated with a trigger. Each trigger, except that of the element at one end of the series has a blocking device arranged in response to response of its trigger darkening of its photoelectric element, to operate the trigger of the next photoelectric element in the direction of said end.

3,628,026

LINEAR ENCODER IMMUNE TO SCALE BENDING ERROR

David V. Cronin, West Peabody, Mass., assignor to Dynamics Research Corporation, Wilmington, Mass.

Filed Sept. 5, 1969, Ser. No. 855,546
Int. Cl. G01d *5/34*
U.S. Cl. 250—231 R **7 Claims**



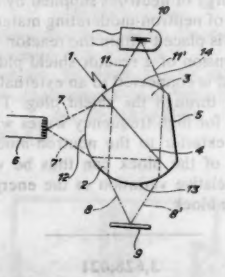
A linear encoder in which scale bending error does not materially affect encoder performance. An elongated generally rectangular encoder scale is provided having a plurality of alternately light responsive and opaque segments on one surface thereof and a plurality of similar segments on an opposite surface thereof, the segments on one surface experiencing equal and opposite deformation to the segments on the opposite surface in the presence of bending stress. An interference pattern sensed from both pluralities of segments is not materially affected by such bending stress, with the result of markedly improved encoder performance under-bending error conditions.

3,628,027

BEAM DEFLECTING AND FOCUSING MEANS FOR PHOTOELECTRIC MONITORING, COUNTING OR CONTROL APPARATUS

Gustav Brauss, Goldach, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed Dec. 17, 1969, Ser. No. 885,805
Int. Cl. G02b *3/00, 17/00;* H01j *39/12*
U.S. Cl. 250—216 **4 Claims**



The beam deflecting and focusing system includes a lens member of approximately spherical shape formed of two transparent substantially hemispherical parts as well as a partly reflective partly transparent mirror located in the contact plane between the two hemispherical parts. The mirror is arranged to reflect light from a light source to a reflector out-

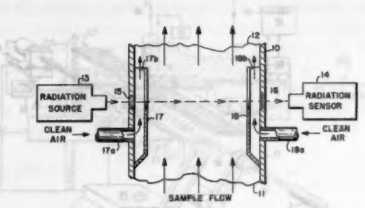
side the lens members and to transmit reflected light from the reflector onto the photocell.

3,628,028

WINDOW CLEANING APPARATUS FOR PHOTOMETRIC INSTRUMENTS

Joseph O. Thorsheim, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 1, 1968, Ser. No. 709,669
Int. Cl. G01n *21/26*
U.S. Cl. 250—218 **3 Claims**



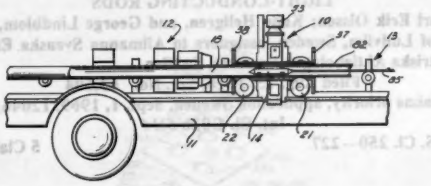
An apparatus for use in photometric instruments is described in which conditioning of the gaseous sample under study is unnecessary. No filters, condensers, sample heaters, vapor traps or detector heaters are used. A curtain of clean air over the radiation source and radiation detector windows protects them from condensate or particulate matter in the sample and provides a fixed radiation path length.

3,628,029

APPARATUS FOR INSPECTING TUBULAR GOODS

David R. Tompkins, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 587,138, Oct. 17, 1966, now abandoned. This application July 15, 1968, Ser. No. 744,861
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 D **7 Claims**



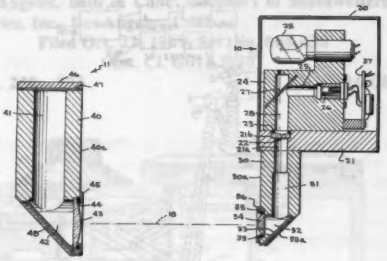
In the representative embodiment of the invention disclosed herein for measuring the wall thickness of elongated tubular goods being axially translated along a selected inspection axis, a radiation detector coaxially positioned within a moving tubular member provides a characteristic signal in response to a sharply focused beam of radiation that is progressively swept around the tubular member and continuously intersects the detector. To obtain this clearly defined radiation pattern, a radioactive source that is rotated outside of the tubular member in a circular path around the inspection axis is disposed adjacent to the outer ends of two or more focusing slots that converge toward the inspection axis. As a result, this sharply defined radiation pattern is substantially smaller than the active portion of the detector so that random or erratic movements of the detector within the moving tubular member will not affect the measurements obtained.

3,628,030

BROKEN END DETECTION SYSTEM FOR WARPERS UTILIZING NOVEL OPTICAL SYSTEM

Raymond Baines Fertig; Lawrence Creigh Nickell, and Henry T. Sessions, all of Ronceverte, W. Va., assignors to Appalachian Electronics Instruments Inc., Ronceverte, W. Va.

Filed Oct. 15, 1970, Ser. No. 80,943
Int. Cl. G01n *21/30*; G06m *7/00*; H01j *39/12*
U.S. Cl. 250—219 S **10 Claims**



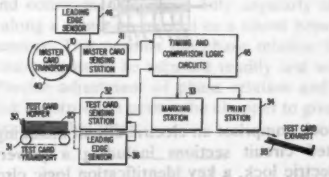
A broken end detector for a warper, wherein a detector head unit has a light source, a phototransistor and a beam splitter mirror and first and second lenses with a front surface mirror therebetween to intercept light traveling from the source through the first lens and redirect the light at right angles through the second lens as a monitoring beam spanning the width of the yarn sheet immediately below the warper measuring roll. A target unit having a lens, a 45° mirror, and a retroreflective surface at the other edge of the yarn sheet retroreflects light from the beam back along the beam axis to the detector head lenses and mirrors and the phototransistor.

3,628,031

CLOSED LOOP CONTROL SYSTEM FOR AUTOMATIC SENSITIVITY CONTROL OF TRANSDUCER

Leo L. Azure, Jr., Richland, Wash., assignor to Automata Corporation, Richland, Wash.

Filed Feb. 6, 1969, Ser. No. 797,160
Int. Cl. G01n *21/30*
U.S. Cl. 250—219 DC **23 Claims**



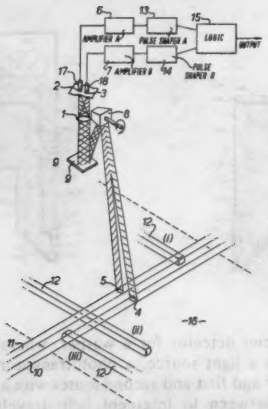
A sensitivity control circuit for a of device automatically and periodically establishes a reference level corresponding to the output of the device when sensing a reference level of illumination and maintains that reference level for referencing the output of the device during subsequent sensing operations. The reference level corrects for variations in the output of the device resultant from drift and other factors unrelated to information to be sensed. A particular application of the circuit is in a test scoring machining having optical scanning of information presented on cards wherein the reference level is established in response to sensing of card background in timed relationship to the scanning of the card.

3,628,032

APPARATUS FOR DETECTING OBJECTS

Robert A. Senior, Uppingham, Rutland, and Peter J. Trigg, Corby, Northamptonshire, both of England, assignors to Stewarts and Lloyds Limited, Glasgow, Scotland

Filed July 1, 1969, Ser. No. 838,301
Int. Cl. G01n 21/30
U.S. Cl. 250—219 LG 3 Claims



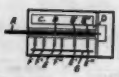
Apparatus for detecting an object which has a rotating mirror and photocells arranged to scan two parallel paths, amplifiers and pulse shapers for processing signals produced by the photocells in response to variations in radiation along the paths, and a logic circuit for comparing the signals.

3,628,033

PHOTOELECTRIC TIME DELAY LOCK

Jean-Francois Taillens, 65 Chemin Isabelle de Montolieu, 100 Lausanne, Switzerland

Filed Aug. 19, 1969, Ser. No. 851,361
Int. Cl. G01n 21/30
U.S. Cl. 250—219 D 2 Claims



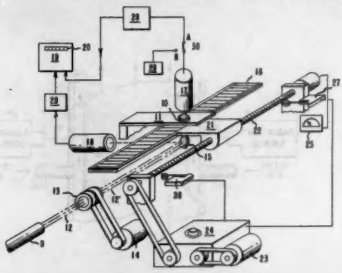
The lock comprises an electric circuit including four interconnected circuit sections including a power supply, a photoelectric lock, a key identification logic circuit, and an electrically actuated door latch. These circuit sections are adapted to verify the predetermined position of a plurality of apertures contained in the forward body portion of an opaque key as well as the absence of apertures therein by means of light rays emanating from a light source located adjacent the key and traversing these apertures to one of two sets of selectively positioned photoconductive elements on the other side of the key when the key is inserted into the lock. Output signals are provided from both sets of photoconductive elements in response to the aperture configuration of the key which are coupled to the logic circuit where proper identification of the key is made to then operate the door latch if the proper code is presented by the key.

3,628,034

DEVICE TO DETECT MOTION AND MEASURE SPEED FROM THE DELAYED FLUORESCENCE OF AROMATIC COMPOUNDS

Vladimiro Ern, and Richard E. Merrifield, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 26, 1970, Ser. No. 50,104
Int. Cl. G02f 1/18
U.S. Cl. 250—225 10 Claims



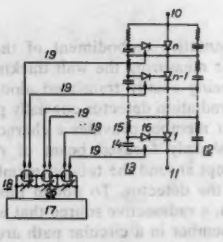
Motion is detected or speed is measured by producing an image of the moving object or series of objects in a material which displays the phenomenon of delayed fluorescence and measuring the intensity of the delayed fluorescence, or modulating the intensity of the imaging light and measuring the phase shift of the resulting modulation of the delayed fluorescence. A device for the above comprises a crystalline material which displays the phenomenon of delayed fluorescence, a light source directed at this crystalline material, and a photomultiplier tube to measure the intensity of the delayed fluorescence, or a mechanical chopper to modulate the intensity of the imaging light and two photomultiplier tubes, a tracking filter and a digital phase meter to measure the phase shift of the resulting modulation of the delayed fluorescence.

3,628,035

THYRISTOR-RECTIFIER CONTROLLED BY LIGHT PULSES OF EQUAL INTENSITY AT THE END OF LIGHT-CONDUCTING RODS

Karl Erik Olsson; Keijo Hellgren, and George Lindblom, all of Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Aug. 13, 1970, Ser. No. 63,504
Claims priority, application Sweden, Sept. 1, 1969, 12046/69
Int. Cl. G02b 5/14
U.S. Cl. 250—227 5 Claims



A thyristor rectifier for high voltage is formed of a number of series connected thyristors each having its own control circuit to which control pulses are supplied by a common control device. Glass fiberlike conductors are used for transmitting the control pulses in the form of light pulses. The light intensity of the light pulses to some of the thyristors is

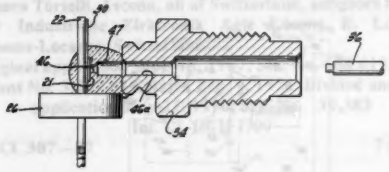
adjusted in relation to others so as to adjust the firing times in relation to each other.

3,628,036

CONNECTOR MEANS FOR A LIGHT-CONDUCTIVE FILAMENT AND PHOTOSENSITIVE SURFACE

John H. Humphrey, Playa Del Rey, Calif., assignor to Data Source Corporation, El Segundo, Calif.

Filed Dec. 22, 1969, Ser. No. 887,185
Int. Cl. G02b 5/14
U.S. Cl. 250—227 5 Claims



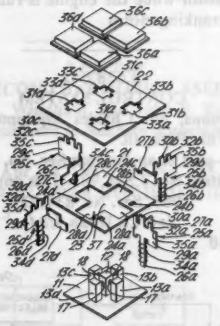
A means and method for removably operably connecting a light conducting and directing filament means of small diameter (in the order of 0.005 to 0.020 inches) with a limited or minute light-sensitive area on a photoconductive element such as a phototransistor or photodiode in order to direct and register a maximum amount of radiant energy such as light on the light-sensitive area. The connecting means and method provides precise positioning and holding of an end face of a filament means in spaced relation to the light-sensitive area while permitting removal of the filament means.

3,628,037

PHOTOELECTRIC SWITCH UNIT

Mititaka Yamamoto, and Kenichi Kitajima, both of Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed July 16, 1969, Ser. No. 842,235
Claims priority, application Japan, July 26, 1968, 43/53273
Int. Cl. G01d 5/34; H01j 1/56
U.S. Cl. 250—229 6 Claims



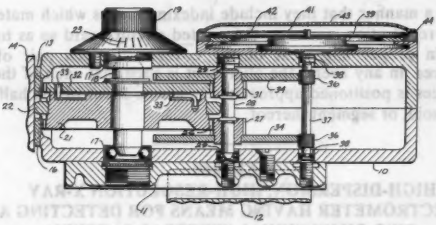
A photoelectric switch unit comprising a single source of light, a plurality of photoelectric elements each so arranged as to receive light from the light source and a plurality of shutters each interposed between the light source and one of the photoelectric elements to normally block the light, each of the shutters being so arranged as to be selectively movable individually and independently of the other shutters from the path of the light to permit the light to enter and actuate the corresponding one of the photoelectric elements. The single source of light, each of the photoelectric elements and each of the shutters are associated to form one photoelectric switch, and there are a plurality of such switches included in the switch unit, the operation of each of which is performed individually and independently of the other switches in the unit.

3,628,038

PHOTOELECTRIC CHOPPER FOR DISTANCE MEASUREMENT

Irven H. Culver, Playa Del Rey, and Ronald C. Sheltra, West Los Angeles, both of Calif., assignors to Southwestern Industries, Inc., Los Angeles, Calif.

Filed Oct. 22, 1969, Ser. No. 868,436
Int. Cl. G01d 5/36
U.S. Cl. 250—233 16 Claims



A distance-measuring system is described in which a wheel is frictionally engaged with a surface along which measurements are made. The metering wheel is connected to a shaft which drives a portion of a photoelectric chopper which provides an indication of increments of metering-wheel travel. The chopper includes a disk on the shaft with a plurality of windows alternating with opaque areas in a circular path near the periphery of the disk. A mask having an arc of somewhat similar windows is adjacent and spaced a short distance away from the disk. A pair of lights and a pair of photosensors are located on opposite sides of the mask-disk set. Each photosensor detects light passing through a different plurality of windows in the mask and disk and, as the disk rotates, a substantially symmetrical variation in light intensity occurs. A minimum area noncollimated light source is provided and the mask is located nearer the light source than is the disk. A greater number of windows per unit length is provided on the mask than on the disk so that successful chopping of a noncollimated light beam is obtained when the mask and disk are spaced apart. The mask is mounted on a ring movably by an eccentric and constrained to move only angularly about its center and along a direction normal to a chord between the two photosensors. This permits the phase relation between the photosensor inputs to be adjusted readily and with high precision. Precise adjustment of phase relation and proper mask and disk construction permit the chopper to give usable signals at very high slue rates.

3,628,039

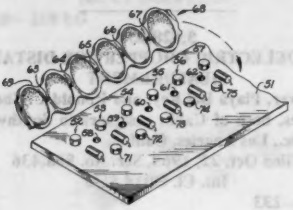
ELECTROMAGNETIC RADIATION WAVE SIGNAL TRANSMISSION APPARATUS

Eugene V. Ochs, Mission Viejo, and Jeffrey L. Monroy, Santa Ana, both of Calif., assignors to Dana Laboratories, Inc.

Filed Dec. 29, 1969, Ser. No. 888,605
Int. Cl. H01l 15/00
U.S. Cl. 250—239 10 Claims

One or more pairs of devices are aligned in a predetermined relationship upon a mounting member such as a printed circuit board. One of the devices is a light-emitting device, and the other is a light-responsive device. Each of the pairs of devices are covered by a surface which, at least over that area upon which the electromagnetic radiation from the emitting device impinges, is a segment of an ellipsoid.

Preferably the cover is a figure of revolution of an ellipse about the major axis which is then divided in half by a plane extending through the major axis. When a plurality of pairs of such devices are utilized, the cover constitutes a plurality of half-ellipsoids interconnected together and arranged in



such a manner that they include indexing means which mate with registration means on the printed circuit board so as to obtain proper alignment of the cover with each pair of devices. In any event, the alignment is such that each of the devices is positioned approximately at one focus of the half-ellipsoid, or segment thereof.

3,628,040

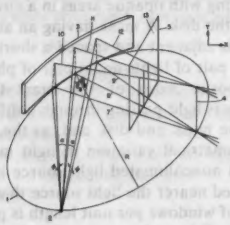
HIGH-DISPERSION, HIGH-RESOLUTION X-RAY SPECTROMETER HAVING MEANS FOR DETECTING A TWO-DIMENSIONAL SPECTRAL PATTERN

Herbert W. Schnopper, and Kenneth Kalata, both of Cambridge, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 19, 1969, Ser. No. 825,532

Int. Cl. G01n *23/22*

U.S. Cl. 250—51.5 **14 Claims**



Apparatus is disclosed for providing a two-dimensional spectral pattern of X-ray radiation. The radiation, which may be provided by a wide angle point source in the apparatus or may come from a cosmic X-ray source, is directed upon a bent crystal to provide spectral dispersion and focusing The rays reflected from the crystal are then detected, as upon a film or the like, at an area positioned away from the focal region of the crystal to produce the two-dimensional pattern. In one embodiment of the apparatus provision is made to feed information from the detector to a computer to yield simultaneous analysis of the radiation both as to the frequencies present therein and the intensity of each.

3,628,041

ELECTRIC CRANKING MOTOR AUTOMATIC DISCONNECT AND LOCKOUT CIRCUIT

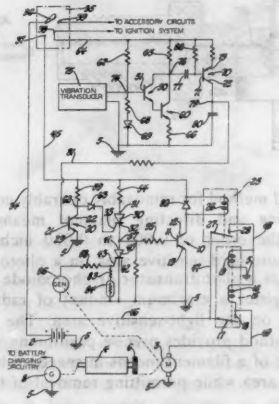
Donald L. Cummins; Morris Esche, and Robert W. Campbell, all of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 23, 1970, Ser. No. 91,682

Int. Cl. F02n *11/00*

U.S. Cl. 290—37 **4 Claims**

An electric cranking motor automatic disconnect and lockout circuit. The normally open contacts of a cranking motor solenoid operated switch are connected in series with the electric cranking motor across a source of direct current supply potential. Upon the closure of an electric switch, the source of direct current supply potential, applied across the gate-cathode electrodes of a first silicon controlled rectifier, triggers this device conductive through the anode-cathode electrodes to establish a circuit for base-emitter current flow through a first transistor. The conductive first transistor establishes an energizing circuit for the operating coil of an electric relay which, in turn, establishes an energizing circuit for the operating coil of the solenoid operated switch. The output potential of an electrical generator driven by the cranking motor armature is applied across the gate-cathode electrodes of a second silicon controlled rectifier. When the



generator output potential is of sufficient magnitude to produce gate-cathode current through the second silicon controlled rectifier, the resulting anode-cathode current flow therethrough shunts base current from the first transistor to extinguish this device, thereby interrupting the energizing circuit for the operating coil of the electric relay and, in turn, the solenoid operated switch to provide automatic disconnect of the cranking motor upon engine start. A vibration transducer mounted upon the cranked engine produces an alternating current potential signal which triggers a second transistor conductive to shunt gate current from the first silicon controlled rectifier thereby preventing the retriggering of the first transistor while the engine is running to provide a lockout of the cranking motor.

3,628,042

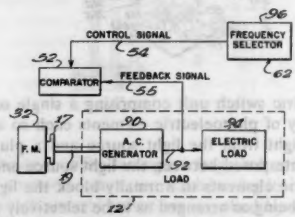
CONTROL SYSTEM

Charles J. Jacobus, c/o Charles Equipment Co. 17W601 North Ave., Villa Park, Ill.

Continuation-in-part of application Ser. No. 801,644, Feb. 24, 1969, now Patent No. 3,558,901. This application July 3, 1969, Ser. No. 839,037

Int. Cl. H02p *9/04*

U.S. Cl. 290—40 **2 Claims**



A control system using a motive source and connected hydrostatic transmission to drive a load at a speed deter-

mined by the volume of fluid flowing in the transmission. A comparator and actuator change the volume of fluid flow in proportion to the deviation between a feedback signal and a control signal. The feedback signal is generated by a sensor responsive to the output of the transmission. The control signal has a value dependent upon the type of load connected to the transmission.

3,628,043

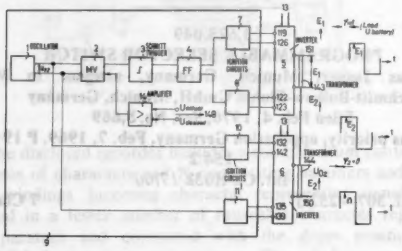
CIRCUIT ARRANGEMENT FOR THE CONTINUOUS CURRENT SUPPLY OF CONSUMERS WITH ASYMMETRICAL LOAD

Werner Ullmann; Franco Donati, both of Locarno, and Gianfranco Tortelli, Ascona, all of Switzerland, assignors to A.G. fur Industrielle Elektronik Agie Losone B. Locarno, Losone-Locarno, Switzerland

Original application Sept. 18, 1967, Ser. No. 668,619, now Patent No. 3,562,619, dated Feb. 9, 1971. Divided and this application May 21, 1970, Ser. No. 39,383

Int. Cl. H02j *1/00*

U.S. Cl. 307—87 **7 Claims**



Apparatus for influencing or controlling the vectors of output voltages from a direct current supply device feeding a multiconductor alternating current transmission system. The total voltage vector for each conductor is generated from two partial voltage vectors. Control of the magnitude of the total voltage vector is effected by phase-shifting the partial voltage vectors, each partial voltage vector being phase-shifted through the same angular magnitude but in opposite angular direction. In this manner, the total voltage vector for each conductor is maintained in a constant phase position even during automatic regulation and in the presence of an asymmetrical load.

3,628,044

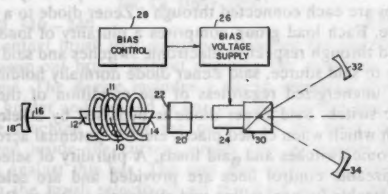
SECOND HARMONIC LASER

Donald S. Young, Windham, and John S. Hancock, Nashua, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Apr. 14, 1969, Ser. No. 815,603

Int. Cl. H02m *5/00;* **H01s** *3/10*

U.S. Cl. 307—88.3 **6 Claims**



An improved second harmonic laser comprises a resonant cavity having disposed in axial alignment therein an active laser material, a second harmonic generating crystal, an electro-optic polarizing crystal and a polarization selector. The output end of the laser cavity comprises a pair of mirrors which have different preselected reflecting properties with respect to the fundamental and second harmonic laser wavelengths.

3,628,045

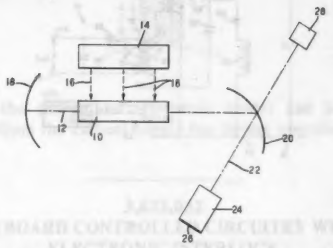
LASER HARMONIC GENERATOR

Ronald B. Chesler, Warren Township, Somerset County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 24, 1969, Ser. No. 818,962

Int. Cl. H02m *5/00;* **H01s** *3/10*

U.S. Cl. 307—88.3 **4 Claims**



In a harmonic generator of the type that includes a laser gain element and a nonlinear optical element both positioned along a main axis of the generator, the laser element may be absorptive of a substantial portion of the harmonic signal generated within the nonlinear element. To prevent such absorption the nonlinear element is positioned in an off-axis path, and the harmonic signal generated therein is directed so as not to traverse the absorptive laser element.

3,628,046

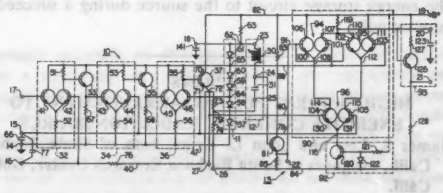
DOUBLE BALANCED GATE CIRCUIT

Alberto Bilotti, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Original application July 31, 1967, Ser. No. 657,410, now Patent No. 3,548,326. Divided and this application Nov. 3, 1969, Ser. No. 871,327

Int. Cl. H03k *17/60*

U.S. Cl. 307—241 **11 Claims**

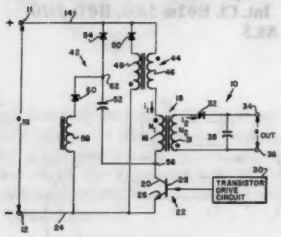


A multistage limiter having overall negative feedback is directly coupled in an integrated circuit to a discriminator which includes a double balanced gate circuit having a pair of differential switching means fed by a third differential switching means which is in series with a current source. A voltage divider provides the third switch with DC bias at a first level and provides the switch pair with DC bias at a second level. The third switch receives a signal directly from the limiter output while the switch pair receives a differentiated signal through the discriminator.

3,628,047
NONDISSIPATIVE POWER LOSS SUPPRESSION CIRCUIT FOR TRANSISTOR CONTROLLED POWER CONVERTERS

Donald L. Cronin, Anaheim, and John J. Biess, Canoga Park, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Apr. 6, 1970, Ser. No. 25,641
Int. Cl. H03k *17/60*
U.S. Cl. 307—246 **2 Claims**



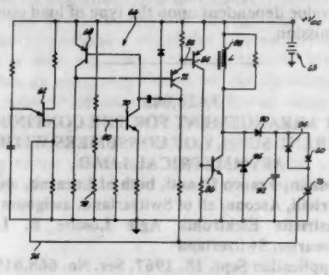
A nondissipative power loss suppression circuit for a transistor controlled DC power converter of the type having a pair of positive and negative input terminals for connection to a source of DC voltage, a power converter inductor having primary and secondary windings, one end of the primary windings being connected to the positive input terminal, a transistor having a base connected to a transistor drive circuit for control of the transistor with turn-on and turnoff pulses, a collector conducted to the other end of the power converter inductor primary winding, and an emitter connected to the negative input terminal, and an output diode in series arrangement for providing a DC voltage output across the arrangement. The power loss suppression circuit consists of an energy absorbing circuit connected to the terminals and the power converter inductor for absorbing input voltage power during a turn-on pulse while said output diode recovers and for transferring excess absorbed power to the source when the diode recovers. Also provided is an energy storage circuit connected to the positive terminal and collector for storing power in the power converter inductor and the energy absorbing circuit during a turnoff pulse. An energy transfer circuit connected to the negative terminal and the energy storage circuit provides for the transfer of energy stored by the energy storage circuit to the source during a succeeding turn-on pulse.

3,628,048
HIGH CURRENT PULSING ARRANGEMENT TO ENERGIZE COHERENT RADIATION SOURCE

James S. Lee, and John L. Engel, both of Santa Barbara, Calif., assignors to Santa Barbara Research Center, Goleta, Calif.

Continuation of application Ser. No. 627,901, Apr. 3, 1967. This application Jan. 2, 1970, Ser. No. 434
Int. Cl. H03k *17/00*
U.S. Cl. 307—246 **10 Claims**

A low-impedance radiation-emitting diode is provided to emit pulses of coherent radiation in response to the application of high energy pulses. The circuit includes an oscillator which triggers a single shot multivibrator, the latter rendering a switching transistor conductive to provide a path through an inductor to ground. Current builds up linearly in the inductor and at termination of the pulse provided by the single shot, the switching transistor assumes a nonconductive state. The inductor is subsequently discharged through a storage capacitor which is appropriately discharged through the

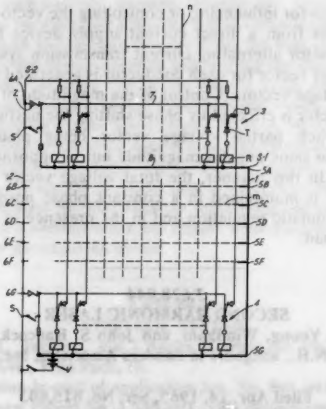


radiation-emitting diode thereby producing the emission of a pulse of coherent radiation.

3,628,049
PROGRAMMABLE SELECTOR SWITCH

Andreas Jasper, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed Feb. 4, 1970, Ser. No. 8,669
Claims priority, application Germany, Feb. 7, 1969, P 19 06 154.2
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 J **7 Claims**



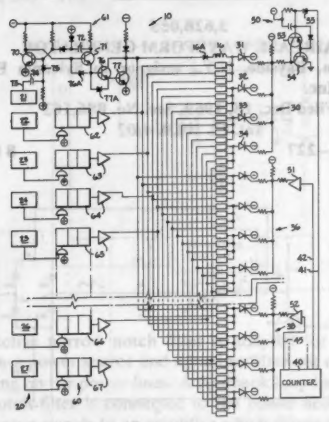
Switching method and apparatus for activating a selected one or ones of the plurality of loads. A plurality of load groups are each connected through a Zener diode to a power source. Each load group comprises a plurality of loads connected through respective electronic switches and said Zener diode to said source, said Zener diode normally holding said loads unenergized regardless of the condition of the electronic switch. Said Zener diode is bypassed by a selectable switch which when closed places electric potential across the electronic switches and said loads. A plurality of selectively energizeable control lines are provided and are selectably energizeable for controlling said electronic switches. By energizing selected ones of said control lines and by closing selected ones of said selectable switches, any desired pattern of said loads may be energized.

3,628,050

RECORDER CONTROL CIRCUIT

John Guzak, Jr., Arlington Heights, Ill., assignor to SCM Corporation, New York, N.Y.

Filed Feb. 17, 1969, Ser. No. 799,740
Int. Cl. H03k *17/00, 17/56*
U.S. Cl. 307—252 H 12 Claims



The disclosed recorder includes a rotating drum containing N lines of characters and N cooperating hammers and control windings. Incoming character representing signals are stored in a lesser number of reuseable character register-comparators and compared with the drum position to establish hammer operating times. The windings are connected in a matrix with different groups of windings controlled by different silicon controlled rectifiers and with the register-comparator units coupled in multiple or parallel to windings in the different groups. The rectifiers are enabled in timed sequence, and the register-comparator units apply timed drive potentials to the common windings and rectifiers so that only the rectifiers in the enabled group conduct and energize the coupled windings.

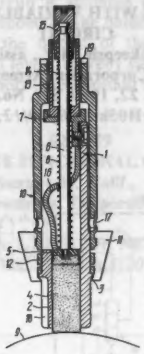
3,628,051

CONTACT BRUSH UNIT FOR AN ELECTRICAL MACHINE, PARTICULARLY FOR A SLIP-RING ELECTRICAL MACHINE

Alexandr Abramovich Chigirinshy, ultisa Kuibysheva, 11, kv. 8; Evgeny Khaimovich Glider, prospekt Ordzhonikidze, 18, kv. 55; Oleg Borisovich Gradov, ulitsa Kosiora, 6, kv. 1; David Bentsionovich Kapnman, ulitsa Frantisheka-Krala 49, kv. 54; Boris Leonidovich Konovalov, ulitsa 12 Aprelya, 10, kv. 16; Boris Bolkovich Spivak, ulitsa Kosiora, 56, kv. 55; Vasily Semenovich Kildishev, ulitsa Plekhanovskaya, 41/43, kv. 55; Ivan Eliseevich MaKogonenko, ulitsa Metallistor, 8, kv. 90, and Ivan Terentievich Filipenko, Saltovskoe shosse, 57, kv. 16, all of Kharkov, U.S.S.R.

Filed Feb. 12, 1970, Ser. No. 10,727
Int. Cl. H01r *39/42*
U.S. Cl. 310—240 6 Claims

A contact brush unit comprises a device for replacement of a worn-out brush without stopping the operation of the machine. The device includes a sleeve, mounted around a brush holder and secured at one end to a current supply bar of the machine so that the portion of the brush holder, received inside the current supply bar, is pressed by the sleeve against this bar. The unit also includes a means for raising the brush selectively off the rotor contact member, e.g. a slip ring, such means being spring-mounted on the stem and freely passing through the other, opposite end of the sleeve, the last-mentioned end of the sleeve having an edge portion adapted to retain thereon the brush-raising means in an abutted position, when the brush is to be replaced,



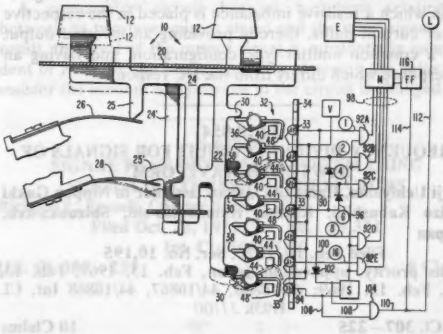
whereby the sleeve and the brush holder can be jointly removed from the current supply bar during operation of the machine.

3,628,052

KEYBOARD CONTROLLED CIRCUITRY WITH ELECTRONIC INTERLOCK

James A. Mitchell, Paris, France, assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 26, 1970, Ser. No. 5,586
Int. Cl. H01h *47/00*
U.S. Cl. 307—115 6 Claims



Relates generally to the production of electrical signals from a keyboard, the keys of which are operatively associated with one or more individual switching devices whose activation to conducting or nonconducting operating conditions is controlled by the displacement of the keys. The invention is more particularly directed to a keyboard protective device characterized as an electronic interlock for causing signals from the keyboard to be ignored if two or more keys are simultaneously displaced by the operator. Means is provided for applying strobe pulses to the keyboard switches and for performing this operation in such a manner that adjacent keys are strobed on different channels. For the numerical input keys of the keyboard this is accomplished by separately strobing the odd and even valued keys because in the usual ten key keyboard the odd and even numbered keys are adjoining neighbors. The invention accomplishes the electronic interlock by detecting a concurrent strobe of the closed switches of the two adjoining depressed keys and utilizing such detection to warn the operator of a false entry

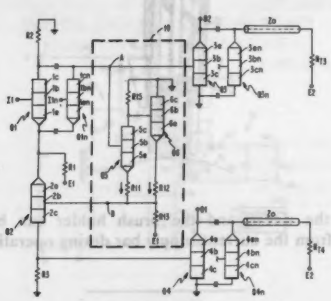
and to cause the resulting output of the keyboard to be ignored.

3,628,053

LOGIC SWITCH WITH VARIABLE THRESHOLD CIRCUIT

Leonard Weiss, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1969, Ser. No. 886,928
Int. Cl. H03k 5/00, 19/12, 19/40
U.S. Cl. 307—203 10 Claims



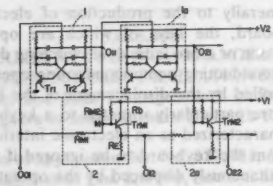
Disclosed is an improved logic switching circuit in the class of switching circuits in which the output signal changes in response to an input signal traversing a reference potential. Disclosed also is an improved means for varying the reference potential resulting in an overall increase in speed and increased immunity to noise in the transient state. The means for varying the reference potential in its essence includes two transistors in a common emitter-type configuration in which a resistive imbalance is placed in the respective emitter current paths, thereby providing an inverted output from a common emitter-type configuration, and having an AC response which differs from the DC response.

3,628,054

FREQUENCY-DIVIDING CIRCUIT FOR SIGNALS OF SAWTOOTH WAVEFORM

Yasuji Uchiyama, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki, Kaisha, Hamanatsu-shi, Shizuoka-ken, Japan

Filed Feb. 10, 1970, Ser. No. 10,195
Claims prority, application Japan, Feb. 13, 1969, Feb. 13, 1969, Feb. 13, 1969; 44/10866, 44/10867, 44/10868 Int. Cl. H03k 21/00
U.S. Cl. 307—225 10 Claims



A frequency-dividing circuit for signals of sawtooth waveform, comprising: a buffer transistor to the base of which an input sawtooth wave and an output square wave of a square-wave frequency divider are applied in their states of equal peak amplitude through mixing resistors having equal value, and a mixing circuit for obtaining an output of a frequency-divided sawtooth wave from the emitter of said buffer transistor, a compensating DC voltage being superposed at any point of the circuit so that the lower ends of the mixed signal appearing at said base are offset from said emitter potential by a voltage value which is greater than the forward voltage drop between the base and the emitter of the transistor thereby to cause said buffer transistor to perform a perfect class "A" amplifying operation.

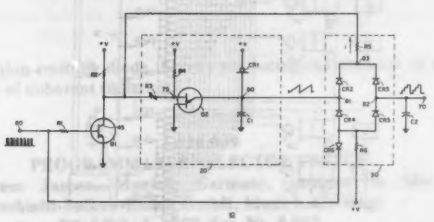
Furthermore, modifications of the circuits mentioned above are described.

3,628,055

STAIRCASE WAVEFORM GENERATOR

Jackson Lum, Bayside, N.Y., assignor to Sylvania Electric Products, Inc.

Filed Dec. 18, 1969, Ser. No. 886,163
Int. Cl. H03k 4/02
U.S. Cl. 307—227 8 Claims



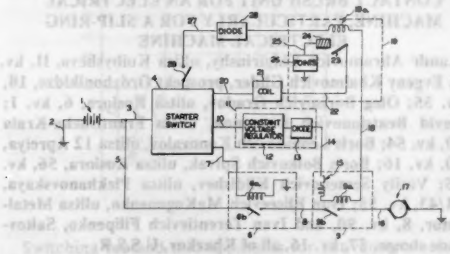
An apparatus which receives a sequence of input pulses and generates a staircase waveform. The input pulses activate a sampler which samples the value of a periodic sawtooth voltage. The sampled values are maintained in the intervals between input pulses by holding capacitor. In a preferred embodiment the periodic sawtooth voltage is synchronized by the input pulses.

3,628,056

ANTITHEFT STARTING AND IGNITION SYSTEM

Eugene B. Buchanan, Beaverbrook Road, Box 449, RD. #4, Newburgh, N.Y.

Filed June 10, 1970, Ser. No. 45,122
Int. Cl. H02g 3/00
U.S. Cl. 307—10 9 Claims



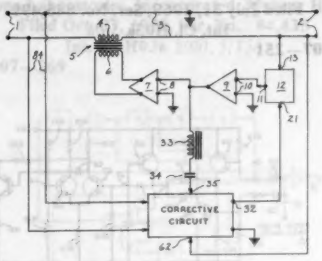
An antitheft starting and ignition system includes an activating circuit for selectively operating a starting and ignition circuit. The activating circuit includes a second solenoid relay integrally attached to the starter. The primary of the second solenoid relay operates to start the starter when a predetermined voltage different from that of the starting and ignition circuit is present in such primary. This predetermined voltage is supplied to the primary of a distributor relay. This primary closes the secondary of the distributor relay to provide current to the distributor points only when the predetermined voltage is present in the primary. The primary of the distributor relay is grounded only when the starter switch is in the "START" position.

3,628,057

CORRECTIVE CIRCUIT FOR AN ACTIVE NARROW NOTCH FILTER

Hans Mueller, Houston, Tex., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed June 19, 1970, Ser. No. 47,854
Int. Cl. H02m 1/12
U.S. Cl. 307—105 10 Claims



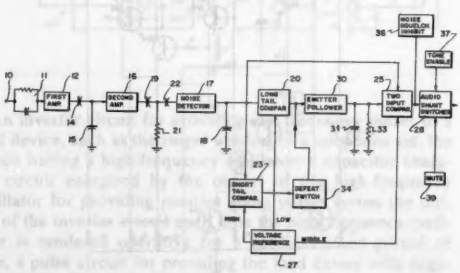
An active narrow notch filter is adapted for connection between a power source and a load to filter out noise signals appearing on the power lines. A feedback loop having a stop-band notch filter is connected to the power lines and feeds interference signals to an amplifier which drives a correction transformer inserted in the power lines to cancel out interference signals from the power source. A corrective circuit is connected to form a feedback loop with the amplifier and notch filter to generate a feedback signal that is applied to eliminate any power line signal that passes through the notch filter. This corrective circuit has a first detector circuit producing an error signal which is fed through a first modulator to generate one component of the feedback signal that cancels out power line signals passing through the notch filter, and a second detector circuit and modulator that produces a second component of the desired feedback signal that is in quadrature with the first component.

3,628,058

INTEGRATED DUAL TIME CONSTANT SQUELCH CIRCUIT

Roy H. Espe, Lombard, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 24, 1970, Ser. No. 13,390
Int. Cl. H03k 5/20; H04b 1/10
U.S. Cl. 307—235 16 Claims



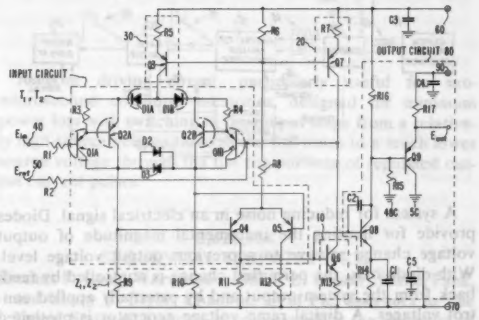
An integrated circuit dual time constant squelch circuit for eliminating squelch tail includes a short time constant ripple filter which produces a filtered noise voltage which is applied to the inputs three differential switch circuits actuated at three different threshold levels. The differential switch with the lowest threshold level establishes the minimum detected noise voltage to which the circuit responds and, upon actuation, charges a long time constant storage capacitor to a value exceeding a second threshold of a second of the differential switch circuits used as an output switch and having the capacitor connected to a second input thereof. The third differential switch circuit is actuated when a third, higher, threshold level is exceeded by the detected noise voltage and operates to disable the output of the second differential switch at strong signal levels, thereby switching control of the circuit solely to the short time constant ripple filter.

3,628,059

HIGH VOLTAGE FUNCTIONAL COMPARATOR

George G. Y. Niu, Sunnyvale, Calif., assignor to Fairchild Camera and Instruments Corporation, Mountain View, Calif.

Filed June 1, 1970, Ser. No. 41,963
Int. Cl. H03k 5/20
U.S. Cl. 307—235 8 Claims



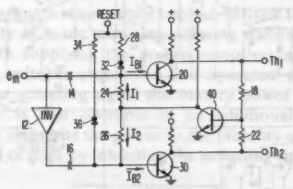
A comparator circuit has an hysteresis relationship between its two-level output signal and the input signal. As a result, the level of the output signal is substantially independent of noise on the input signal. By changing the value of a resistor the amount of hysteresis in the circuit is changed.

3,628,060

SIGNAL PEAK DETECTION SYSTEM USING SENSITIZED THRESHOLD DETECTORS

Richard L. Fussell, Chester Springs, Pa.

Filed Oct. 23, 1970, Ser. No. 83,321
Int. Cl. H03k 5/20
U.S. Cl. 307—235 9 Claims



A signal peak detection system is disclosed which in a preferred embodiment utilizes a pair of threshold detectors each having a normally conducting input stage. The initial actuation of one of the detector stages, that is, the cessation of conduction in its input stage, in response to an input analog signal provides threshold information to decision logic for initiating signal analysis processing. Circuit means are provided to remove the "turn-on" bias current from both detector stages coincidentally with the above-mentioned initial actuation. The latter operation "sensitizes" the other detector but the input stage thereof remains conducting due to the slope of the input signal applied thereto. Subsequently, as the

input signal passes over-the-peak, only a minimal dv/dt input is necessary to actuate this last detector. The concurrent actuation of both detectors causes a peak indication substantially close to the true signal peak to be presented to the decision logic. An output from the system is generated only when predetermined characteristics of the input signal have been validated by the decision logic.

3,628,061

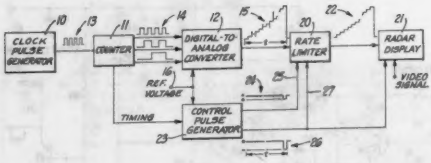
NOISE REDUCTION SYSTEM

Robert W. Jackman, San Diego, Calif., assignor to Universal Signal Corporation

Continuation-in-part of application Ser. No. 609,890, Jan. 17, 1967, now abandoned. This application Dec. 17, 1969, Ser. No. 886,005

Int. Cl. H03k *5/08*

U.S. Cl. 307—237 **17 Claims**



A system for reducing noise in an electrical signal. Diodes provide for limiting the incremental magnitude of output voltage change relative to a previous output voltage level. With diode bias, the permitted change is controlled by feedback from the system output and by externally applied control voltages. A digital ramp voltage generator is presented incorporating such a system for eliminating noise spikes resulting from noncoincident operation of flip-flops.

3,628,062

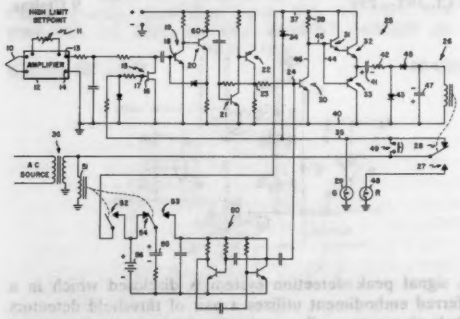
LIMIT CONTROL APPARATUS WITH MOMENTARY POWER FAILURE BRIDGE

Yves de Bretagne, Amiens, France, assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 8, 1969, Ser. No. 882,996

Int. Cl. H03k *17/00*

U.S. Cl. 307—255 **12 Claims**



A limit control having an alternating current signal whose phase reverses when a limit condition, such as a high limit, occurs. The limit control includes a phase detector which controls an output relay to deenergize the relay and signal the limit condition upon the occurrence of such a phase reversal, and a memory power failure bridge which operates for a short time period after a power failure to (1) modify the phase detector so that it no longer requires a specific phase input to maintain the relay energized, and (2) to supply an alternating current signal to the input of the phase detector, whereupon, if power is not restored after the short time period, the relay becomes deenergized.

3,628,063

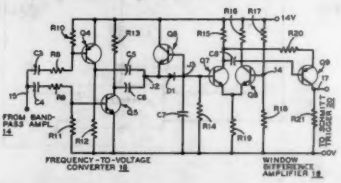
RECEIVER FOR FREQUENCY SHIFT KEYED SIGNALS

Mordechai I. Tamari, Babylon, N.Y., assignor to Computer Transceiver Systems, Inc., Upper Saddle, N.J.

Filed July 31, 1969, Ser. No. 846,499

Int. Cl. H03k *5/08*

U.S. Cl. 307—251 **13 Claims**



A transceiver is connected to a line for transmitting tones to a remote point and receiving tones from the remote point. The receiver portion of the transceiver comprises a filter means, a band-pass limiter amplifier, a frequency-to-voltage converter, a difference amplifier, a Schmitt trigger and an output amplifier connected in series to a utilization device whereby the tones are converted to voltage pulses.

3,628,064

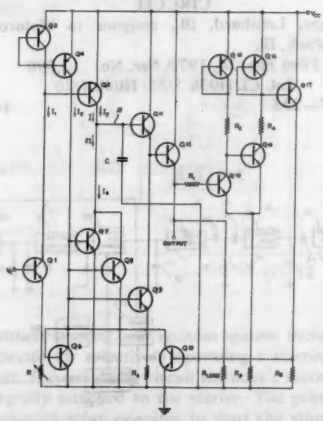
VOLTAGE TO FREQUENCY CONVERTER WITH CONSTANT CURRENT SOURCES

Hans R. Camenzind, Los Altos, and Alan B. Grebene, Sunnyvale, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Filed Mar. 13, 1969, Ser. No. 806,855

Int. Cl. H03k *5/00, 1/10*

U.S. Cl. 307—261 **3 Claims**



A voltage controlled multivibrator which is in integrated form includes an integrating capacitor which is charged by one current source of the value I and discharged by a second current source of a value 2I. The first current source is on continuously and the second current source is turned on and off by the switching of a Schmitt trigger which is responsive to the voltage across the capacitor reaching a maximum voltage at which time the current source is turned on and a

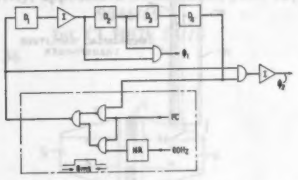
discharging of the capacitor to a minimum voltage at which time the current source is turned off. The integrated format of all of the transistors along with a high-impedance input of the Schmitt trigger provides an extremely small or zero temperature coefficient.

3,628,065

CLOCK PULSE GENERATOR

Donald Gifford Hill, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 27, 1970, Ser. No. 84,435
Int. Cl. H03k *5/00, 5/156*
U.S. Cl. 307—269 **9 Claims**



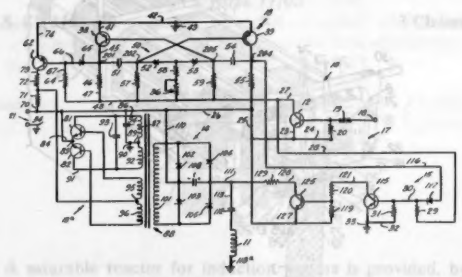
A variable speed two-pulse clock circuit or pulse generator is formed by a group of time delay sections connected in cascade in combination with logic control circuitry. Each time delay section is formed from a combination of IGFETS and MOS capacitors and, hence, the system lends itself to production by integrated circuit fabrication techniques.

3,628,066

ADJUSTABLE FREQUENCY BIPOLAR SQUARE WAVE GENERATING CIRCUIT

Ronald J. Surprenant, Anaheim, Calif., assignor to The Okonite Company, Ramsey, N.J.

Filed Nov. 10, 1969, Ser. No. 875,000
Int. Cl. H03k *3/286*
U.S. Cl. 307—271 **7 Claims**



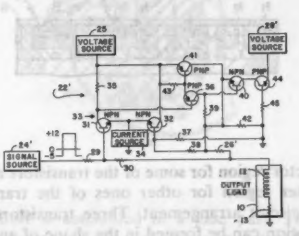
An inverter circuit for providing low-frequency pulses to a load device, such as the ringer winding of a telephone set, the circuit having a high-frequency oscillator, a capacitor charging circuit energized by the output of the high-frequency oscillator for providing positive going pulses across the output of the inverter circuit each time the high-frequency oscillator is rendered operative for a predetermined period of time, a pulse circuit for providing the load device with negative going pulses each time it is operative; and a low-frequency multivibrator for alternately, at a low-frequency rendering the high-frequency oscillator and the pulse circuit operative for predetermined periods of time, whereby said output of the inverter circuit is energized by alternately positive and negative going pulses, the frequency of oscillation of the multivibrator being variable. A multivibrator whose frequency of oscillation is variable over a wide range by a resistance type control.

3,628,067

LOW POWER CURRENT PULSER FOR INDUCTIVE LOADS

Charles P. Womack, Canoga Park, Calif., and Charles J. Ulrick, Marion, Iowa, assignors to Collins Radio Company, Cedar Rapids, Iowa

Filed Oct. 31, 1969, Ser. No. 872,882
Int. Cl. H03k *7/00*
U.S. Cl. 307—270 **8 Claims**



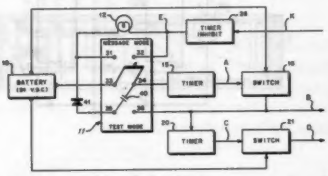
A core driving circuit, particularly useful for submicrosecond computer memories, designed for minimum power loss with switching in the output stage from a relatively high-source voltage through the rise times to a much lower source voltage through the flat top portions of regulated output current pulses.

3,628,068

SEQUENTIAL TIMING SYSTEM

Thomas F. Long, Warminster; Elliott L. Ressler, Elkins Park, and Henry R. Beyer, Chalfont, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy

Filed June 25, 1970, Ser. No. 49,757
Int. Cl. H03k *17/28*
U.S. Cl. 307—293 **8 Claims**



Battery power is sequentially applied in fixed time intervals to a plurality of loads requiring differing stabilizing periods. The network supplying the power comprises a plurality of timers and switches sequenced and operated so that upon receiving an actuating signal the battery power is removed. The system is also operable in an additional mode that sequentially transmits the power to the plurality of loads for a fixed period of time by inhibiting the actuating signal.

3,628,069

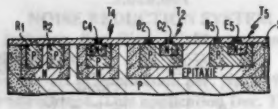
MONOLITHIC INTEGRATED CIRCUIT HAVING INVERSELY OPERATED TRANSISTORS

Knut K. Najmann, and Hermann Frantz, both of Boblingen, Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 29, 1969, Ser. No. 820,178
Claims priority, application Germany, Apr. 30, 1968, P 17 64 241.0
Int. Cl. H01l *19/00*
U.S. Cl. 307—303 **3 Claims**

A planar monolithic circuit is made with a plurality of transistors in a single isolated region in a common emitter

circuit configuration. An N-type epitaxial layer constitutes the emitter region into which the base regions of a P-type material are subsequently diffused, and an N-type collector is then diffused into the base regions forming NPN transistors. The N-type epitaxial region can simultaneously be the common collector region for some of the transistors and the common emitter region for other ones of the transistor in an operative circuit arrangement. Three transistors in a single isolated region can be formed in the shape of an "L" so that when two of these are interlinked, a rectangle is formed.

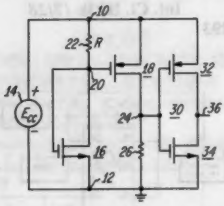


3,628,070

VOLTAGE REFERENCE AND VOLTAGE LEVEL SENSING CIRCUIT

Robert Charles Heuner, Bound Brook, and Stanley Joseph Niemiec, Somerville, both of N.J., assignors to RCA Corporation

Filed Apr. 22, 1970, Ser. No. 30,643
Int. Cl. H03k 17/60, 19/08
U.S. Cl. 307—304 **13 Claims**



The sum of the threshold voltages of two transistors of different conductivity type is employed as a reference level in voltage sensing and other circuits. A first transistor connected as a diode and its current source are connected in series between a pair of terminals to which a voltage to be sensed is applied. A second transistor of different conductivity type than the first transistor is connected at its control electrode to the connection of the diode to its current source. The conduction path of the second transistor in series with its load is connected at at least one end to one of the pair of terminals.

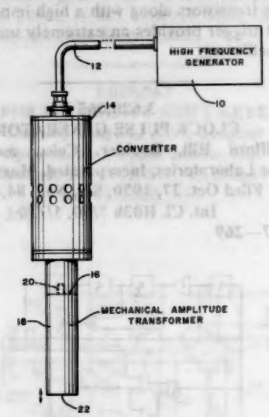
3,628,071

MECHANICAL AMPLITUDE TRANSFORMER

Everett A. Harris, and Stanley E. Jacke, both of Ridgefield, Conn., assignors to Branson Instruments, Incorporated, Stamford, Conn.

Filed May 1, 1970, Ser. No. 33,637
Int. Cl. H01v 7/00
U.S. Cl. 310—8.2 **9 Claims**

A mechanical amplitude transformer for use with sonic or ultrasonic energy comprises two members of different density material joined to each other by a metallurgical bond and dimensioned to operate as a half wavelength resonator when energized with energy of predetermined frequency.

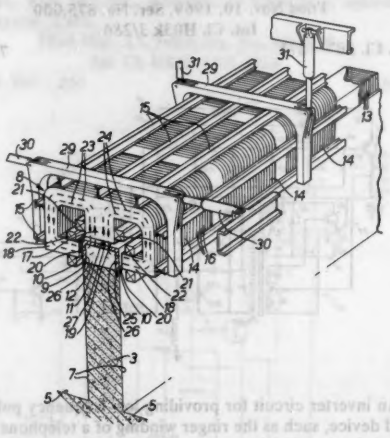


3,628,072

LINEAR INDUCTION MOTOR

Brian John Nicholson, Milton, England, assignor to Tracked Hovercraft Limited, London, England

Filed June 17, 1970, Ser. No. 47,080
Claims priority, application Great Britain, June 18, 1969, 30,926/69
Int. Cl. H02k 41/02
U.S. Cl. 310—13 **14 Claims**



In a linear induction motor the primary member comprises longitudinally disposed stacks of transverse laminations formed with a three-phase winding, and the secondary member comprises an electrically conductive reaction member backed by further transverse magnetic laminations. The magnetic material of the primary and secondary members provides in combination low-reluctance paths which are orientated transversely of the motor and in which working flux passes to produce propulsive force by cooperation with currents which it induces in the reaction member. The part of each low-reluctance path provided by the primary member terminates in end faces which are inclined to one another by an angle of substantially less than 180° and usually 90°, and the secondary member likewise terminates magnetically in

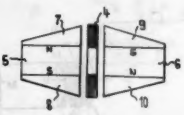
end faces inclined to one another by this or a similar angle. The invention is of particular application to transportation systems in which gas cushion vehicles operate along a track having an upstanding central projection for providing vehicle guidance surfaces; the secondary member of the induction motor may then conveniently form the top of the projection.

3,628,073

POLARIZED MICROMOTOR

Jean-Claude Berney, Lausanne, Switzerland, assignor to Compagnie des Montres Longines Francillon S.A., Bern and Bernard Golay S. A., Vaud, Switzerland

Filed May 25, 1970, Ser. No. 40,190
Claims priority, application Switzerland, June 13, 1969, 9046/69
Int. Cl. H02k *33/16*
U.S. Cl. 310—36 **6 Claims**



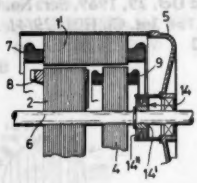
A polarized micromotor, including at least one flat coil, cooperating with at least one magnetic circuit consisting of one pair of permanent magnets and two pairs of polar pieces, characterized in that the magnets have their magnetizing axes perpendicular to the axis of the coil and are arranged in the close vicinity of said coil, the fields of the magnets being parallel to each other and of opposite senses, the polar pieces being fixed to the faces constituting the poles of the magnets and covering the latter without extending beyond them.

3,628,074

SATURABLE REACTOR FOR INDUCTION MOTORS, MAGNETICALLY IN SHUNT TO THE MAIN CIRCUIT

Orazio Fabbrini, Via Barromini 35, Varese, Italy

Filed Dec. 16, 1969, Ser. No. 885,399
Claims priority, application Italy, Dec. 19, 1968, 25316 A/68
Int. Cl. H02k *11/00*
U.S. Cl. 310—72 **3 Claims**



A saturable reactor for induction motors is provided, by which the rotor currents and consequent stator currents of the motor at the start, together with the variation of the working point of the motor and the correction of the power factor is obtained, the stator winding of the motor being also the stator winding of the saturable reactor.

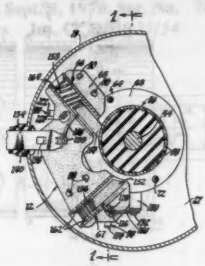
3,628,075

BRUSH HOLDER ASSEMBLY FOR DYNAMOELECTRIC MACHINES

Gene L. Dafler, New Lebanon, and Wayne V. Fannin, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 6, 1970, Ser. No. 87,386
Int. Cl. H02k *13/00*
U.S. Cl. 310—239 **4 Claims**

In a preferred form, a brush-holder assembly for dynamoelectric machines includes a support plate formed with a yieldable clip for holding a brush in a retracted position by engaging the brush shunt wire. The brush is held retracted to prevent its interference with the machine rotor when the rotor is assembled to a case part. The brush is released by depressing the yieldable clip out of the path of the shunt wire so that the shunt wire is disengaged.

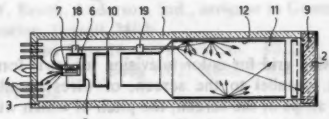


3,628,076

PHOTOCONDUCTIVE SCREEN DERIVING LIGHT THROUGH LIGHT CONDUCTOR FROM TUBE FILAMENT

Willem Paul Weijland; Hans Georg Gerlach; Antonius Joannes Maria Van Den Beld, and Louis Maarten Swart, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 17, 1969, Ser. No. 885,914
Claims priority, application Netherlands, Dec. 24, 1968, 6818583
Int. Cl. H01j *31/28, 31/38, 5/16*
U.S. Cl. 313—65 A **4 Claims**



A television camera tube of the Vidicon type in which a photoconductive screen at one end of an evacuated envelope receives an image of a scene to be televised and is scanned by an electron beam. An auxiliary light source is provided for uniformly illuminating the screen and a light conductor, at least partly outside the path of illumination from the scene, conducts light from the auxiliary source to the screen.

3,628,077

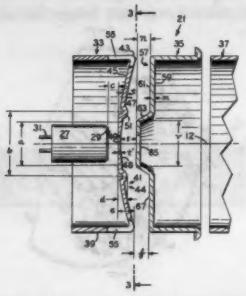
ELECTRON GUN HAVING CONCAVE COINED GRID AND ANNULAR RIB

Chris F. Bossers, Seneca Falls, N.Y., assignor to Sylvania Electric Products Inc.

Filed Feb. 26, 1970, Ser. No. 14,504
Int. Cl. H01j *29/02, 29/46, 1/46*
U.S. Cl. 313—82 **3 Claims**

A plural electrode electron gun comprises a cathode and related first and second grid electrodes having compatibly shaped adjacent functional surfaces. The apertured functional portion of the first grid is formed in a concave manner with the concavity thereof facing away from the cathode; the first grid having an aperture concavely coined within the concavity. The superfluous material resultant from the aperture coining is utilized adjacent thereto in forming an axially

oriented annular rib which is shaped to protrude within the concavity. The second grid electrode has a compatibly



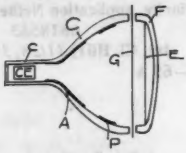
shaped functional portion formed to functionally cooperate with the concave portion of the first grid electrode.

3,628,078

VARIABLE-PITCH FOCUSING GRID FOR COLOR TELEVISION TUBES

Jean Pierre Galves, and Aldo Moro, both of Paris, France, assignors to Thomson-CSF

Filed May 9, 1969, Ser. No. 823,290
Claims priority, application France, May 31, 1968, 153503
Int. Cl. H01j *1/46, 31/20, 29/02*
U.S. Cl. 313—86 **1 Claim**



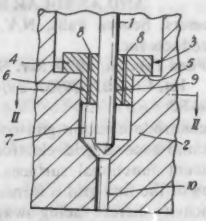
A focusing grid for color television tubes, is formed by a flat sheet, parallel to the screen, of wires parallel to the phosphor strips of the screen, the pitch of which wires varies from the center towards the edges of the screen in accordance with a predetermined law.

3,628,079

ARC PLASMA GENERATORS

David John Miller Dobbs; Derek Linder; Leslie John Giles, and Joseph Kenneth Hill, all of London, England, assignors to British Railways Board, London, England

Filed Feb. 3, 1970, Ser. No. 8,249
Claims priority, application Great Britain, Feb. 20, 1969, 9359/69
Int. Cl. H01j *17/26*
U.S. Cl. 313—231 **3 Claims**



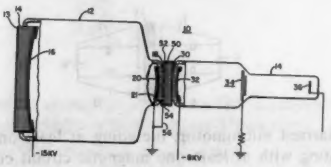
A plasma generator comprises a torch in which a spacer made of a refractory material and having a central opening in which the cathode is fitted and a concentric ring of peripheral openings which serve to feed the plasma gas into the arc chamber of the torch in uniformly distributed fashion is provided in the interior of the anode unit. Suitably the spacer is of disc-shape with a concentric ring of equally spaced openings extending axially through it.

3,628,080

FIBER OPTIC OUTPUT FACEPLATE ASSEMBLY SYSTEM

Per T. Lindeqvist, Elmira, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 8, 1969, Ser. No. 848,668
Int. Cl. H01j *29/46, 31/26*
U.S. Cl. 315—9 **7 Claims**



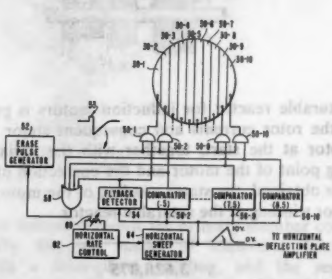
A fiber optic faceplate for an electron tube in which an electron sensitive phosphor is provided on the inner surface of the faceplate and the light image from the phosphor is viewed or coupled through the fiber optic faceplate to an image intensifier. By providing an electrical conductive coating on the outer surface of the fiber optic faceplate, an improved fiber optic faceplate assembly is provided.

3,628,081

PROGRESSIVELY ERASING AND UPDATING STORAGE TUBE FOR ECG. DISPLAY

Barouh V. Berkovitz, Newton Highlands, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Oct. 29, 1969, Ser. No. 872,231
Int. Cl. H01j *29/41*
U.S. Cl. 315—12 **11 Claims**



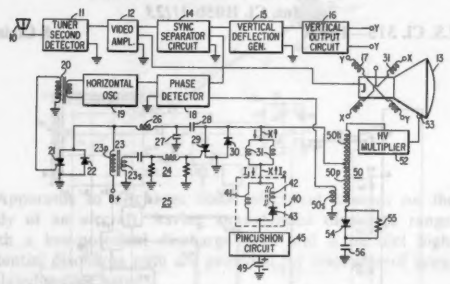
An ECG. display on which the ECG. signal appears on a storage cathode-ray tube. Instead of erasing the entire display at the end of each line trace, only a short segment at the leftmost side of the trace is erased. As the new sweep begins, the old trace is progressively erased. In effect, an "erase" signal precedes the write beam as it moves from left to right across the screen. The arrangement permits display of each ECG. waveform for the maximum time period.

3,628,082

LINEARITY CORRECTION CIRCUIT UTILIZING A SATURABLE REACTOR

Wolfgang Friedrich W. Dietz, New Hope, Pa., assignor to RCA Corporation

Filed Jan. 27, 1970, Ser. No. 6,122
Int. Cl. H01j 29/70
U.S. Cl. 315—27 SR 12 Claims



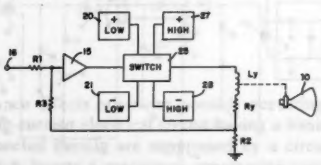
A linearity correction circuit utilized in a horizontal deflection stage of a television receiver provides linearity correction by utilizing a nonlinear variable impedance comprising the parallel combination of a self-saturating saturable reactor and an inductor coupled in series with the horizontal yoke or deflection winding. A unidirectional conducting device is coupled in one of the parallel inductive circuit branches. As the yoke current changes polarity during each deflection cycle, the unidirectional conductive device switches the saturable reactor in and out of the circuit to provide the required linearity correction.

3,628,083

MAGNETIC DEFLECTION AMPLIFIER UTILIZING BOTH POSITIVE AND NEGATIVE VOLTAGE SUPPLIES FOR HIGH-SPEED DEFLECTION

Richard E. Holmes, Bellbrook, and Joe A. Mays, Xenia, both of Ohio, assignors to Systems Research Laboratories, Inc., Montgomery County, Ohio

Filed Aug. 6, 1969, Ser. No. 847,875
Int. Cl. H01j 29/70
U.S. Cl. 315—27 TD 7 Claims



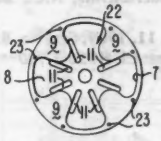
A magnetic deflection amplifier of the type employing a single deflection coil for controlling the movement of a cathode-ray tube beam along one coordinate axis includes both positive and negative low-voltage supplies connected to supply the energy to move the beam for a majority of the operating time, and positive and negative high-voltage supplies to move the beam rapidly and/or through large deflection distances when needed. One form of high-voltage supply includes an inductor having an inductance several times the inductance of the deflection coil to supply the energy necessary to change the current through the deflection coil rapidly in the desired direction.

3,628,084

COUPLED CAVITY SLOW WAVE CIRCUIT AND TUBE USING SAME

Robert J. Butwell, San Jose, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Sept. 8, 1970, Ser. No. 70,197
Int. Cl. H01j 25/34
U.S. Cl. 315—3.5 6 Claims



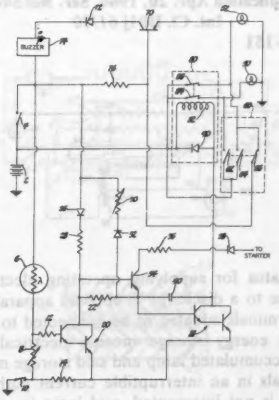
A coupled cavity slow wave circuit, such as a cloverleaf circuit, and a microwave tube using same are disclosed. The slow wave circuit includes an array of cavity resonators arranged successively along the beam path with adjacent ones of the cavities having a common end wall structure. A plurality of generally radially directed coupling slots are cut through the common wall between adjacent resonators to form a plurality of axially aligned arrays of coupling slots angularly displaced around the beam path. Each axial array of slots is angularly displaced about the beam path from the adjacent array by 360/N degrees where N is the number of axially aligned arrays of slots. Each axially aligned array of coupling slots includes a web portion of the common wall for blocking off a line-of-sight path parallel to the beam through at least a portion of each array of coupling slots to inhibit cumulative electromagnetic interaction between undesired beamlets in the arrays of slots and the fields of the slow wave circuit, whereby the efficiency and stability of the tube are increased.

3,628,085

HEADLAMP CONTROL MEANS WITH TIME DELAY

Eugene W. Brock, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed June 26, 1970, Ser. No. 50,250
Int. Cl. B60g 1/02; H05b 37/02
U.S. Cl. 315—82 4 Claims



A vehicle lamp control system which, with the ignition switch closed, automatically energizes the lamps after a first time delay in darkness and deenergizes the lamps after a second time delay in light and, in darkness, automatically deenergizes the lamps after a third time delay when the igni-

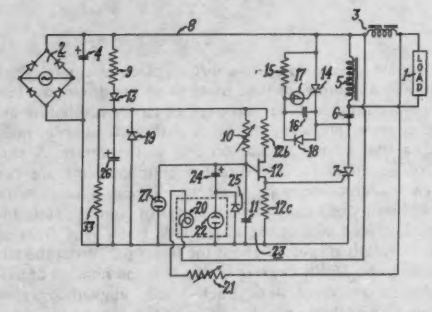
tion switch is opened and energizes the lamps after a fourth time delay when the ignition switch is closed. The time delay circuit consists of a capacitor and a plural number of resistors. The lamp switching circuit also controls the time delay circuit by connecting a different resistor with the capacitor in an RC timing circuit to produce each time delay.

3,628,086

HIGH-FREQUENCY LAMP-OPERATING CIRCUIT

Joe A. Nuckolls, Hendersonville, N.C., assignor to General Electric Company

Filed Sept. 11, 1969, Ser. No. 857,010
Int. Cl. H05b *37/00*
U.S. Cl. 315—100 **19 Claims**



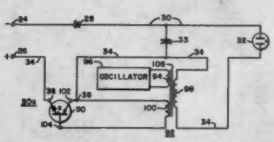
High-frequency circuit for operating gaseous discharge lamps includes an inductor-capacitor resonant circuit having the lamp load connected across the inductor, and a pair of silicon-controlled rectifiers operated alternately by a unijunction oscillatoretriggering circuit to provide for controlled series resonance of the resonant circuit for producing high-frequency voltage across the inductor for energizing the lamp load.

3,628,087

CIRCUIT ARRANGEMENT FOR ENERGIZING DISCHARGE DEVICES

John W. Wigert, Berea, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of application Ser. No. 158,359, Dec. 11, 1961. This application Apr. 20, 1966, Ser. No. 544,035
Int. Cl. H01j *61/00*
U.S. Cl. 315—151 **18 Claims**



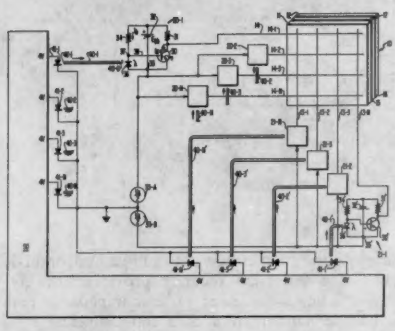
15. Apparatus for supplying operating electrical energy from a source to a discharge lamp, said apparatus comprising: input terminals adapted to be connected to said source; an electrical energy storage means; electrical conductors connecting accumulated lamp and said storage means to said input terminals in an interruptible current path; when said current path is not interrupted, said lamp is operated from said source and electrical energy is stored in said storage means; when said current path is interrupted, said lamp and said storage means are connected in a closed loop to operate said lamp from electrical energy previously stored in said storage means; a sensing and control means responsive to the magnitude of current through said lamp to repetitively interrupt and then restore the continuity of said current path; and said sensing and control means controlling the time said current path is interrupted to stabilize the operation of said lamp.

3,628,088

HIGH-VOLTAGE INTERFACE ADDRESS CIRCUIT AND METHOD FOR GAS DISCHARGE PANEL

Larry J. Schmersal, 6220 Foxcroft, Toledo, Ohio

Filed July 18, 1969, Ser. No. 851,131
Int. Cl. H05b *41/23*
U.S. Cl. 315—169 R **8 Claims**



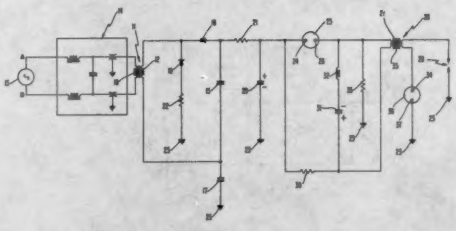
There is disclosed an interface circuit for converting low-voltage logic signal voltage pulses to high-voltage discharge manipulating voltage pulses for a gas discharge display/memory device. The interface circuit is connected such that the output thereof is referenced to the sustaining voltage for the panel. An optical couple is used to isolate the low-voltage logic source from the high-voltage operating circuit. Consult the specification for further details.

3,628,089

PULSE-GENERATING APPARATUS

David C. Baker, Sidney, N.Y., assignor to The Bendix Corporation

Filed Sept. 25, 1969, Ser. No. 861,119
Int. Cl. H05b *37/00*
U.S. Cl. 315—227 **10 Claims**



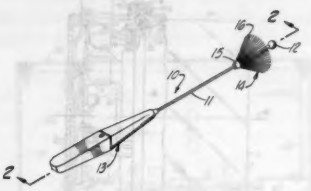
A condenser discharge-type electrical pulse-generating circuit, such as for a combustion engine ignition circuit, wherein two storage condensers are charged in parallel to discharge across a relatively low voltage trigger gap which connects the condensers in series to discharge across a higher voltage control gap and through the primary winding of a transformer, the secondary winding of which is connected in series with a still higher voltage ignition gap, the ignition gap being connected in series with the control gap and one of the condensers, whereby long trigger gap life and high output power are attained.

3,628,090

STATIC DISCHARGE APPARATUS

William K. McLain, Orange, Calif., assignor to Alice Richmond McLain, Orange County, Calif.

Filed Apr. 2, 1970, Ser. No. 25,155
Int. Cl. B64d 45/02
U.S. Cl. 317—2 E 4 Claims



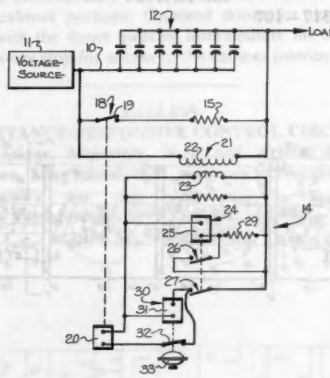
Apparatus to discharge static electrical charges on the body of an aircraft, having an extended discharge range. Both a low-potential discharge path and a parallel high-potential discharge path are provided for discharge of accumulated static charge.

3,628,091

RESONANCE SUPPRESSOR FOR ELECTRICAL SYSTEM INCLUDING CAPACITORS

Herman B. Wolf, Charlotte, N.C., assignor to R. H. Bouligny, Inc., Charlotte, N.C.

Filed May 13, 1970, Ser. No. 36,893
Int. Cl. H02h 7/16
U.S. Cl. 317—12 A 5 Claims



Resonance effects otherwise possibly occurring in a main alternating current electrical circuit having a bank of capacitors connected therein are suppressed by a circuit arrangement which inserts a resonance suppressing resistance into parallel, shunting conductive relation with the bank of capacitors in response to sensing of the presence of a predetermined voltage across the bank of capacitors.

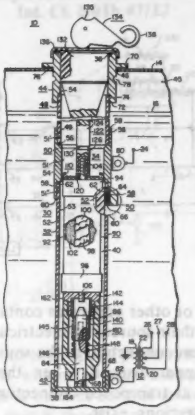
3,628,092

ELECTRICAL INDUCTIVE APPARATUS WITH REMOVABLE PROTECTIVE FUSE

August I. Keto, Sharon, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 3, 1970, Ser. No. 94,846
Int. Cl. H02h 7/04, 85/18; H01h 85/60
U.S. Cl. 317—15 10 Claims

Electrical inductive apparatus, such as a transformer, having a casing containing an electrical winding immersed in a liquid dielectric, and a protective fuse assembly connected between a bushing mounted on the casing and the electrical winding. The protective fuse assembly includes a receptacle which extends into the casing and into the liquid dielectric, but it is sealed therefrom, and a removable fused portion accessible from outside the casing. The receptacle is formed of a plurality of metallic and insulating tubular members, with the ends of certain of the insulating tubular members extending into the ends of a metallic tubular member, to provide sealed, electrically shielded joints. The fused portion includes a current limiting fuse having electrodes connectable via associated contact members to stationary contacts within the receptacle. Arc extinguishing members carried by both the receptacle and fused portions cooperate to make the assembly and disassembly of the fused portion and receptacle load-make and load-break.

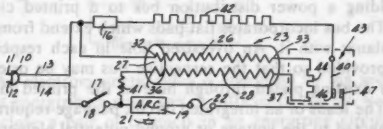


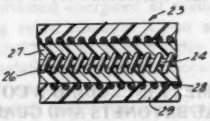
3,628,093

THERMOSTAT OVERHEAT PROTECTION SYSTEM FOR AN ELECTRIC APPLIANCE SUCH AS A BLANKET

George C. Crowley, Winnetka, Ill., assignor to Northern Electric Company, Chicago, Ill.

Filed Apr. 13, 1970, Ser. No. 27,740
Int. Cl. H02h 1/02, 5/04; H01h 37/76
U.S. Cl. 317—18 A 10 Claims





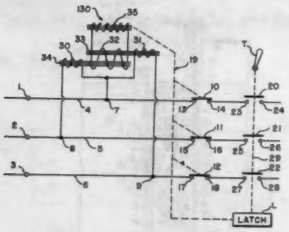
Temperature responsive protection system for an appliance such as an electric blanket which utilizes a pair of conductors which form a part of the heating or sensing circuit and which are insulated under normal temperature operating conditions by temperature responsive material which melts to establish electrical contact between the conductors if an overheat condition exists.

3,628,094

APPARATUS OF MEDICAL AND OTHER TYPES

Arthur Gilbert Billin, Penfield, and John Joseph Saeli, Chili, both of N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed Sept. 23, 1970, Ser. No. 74,566
Int. Cl. H02h 3/26
U.S. Cl. 317—27 R 11 Claims



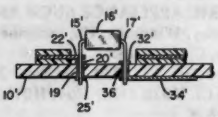
Medical, dental or other apparatus contacting living beings are connected to their sources of electrical energy by safety devices which, upon connection to the sources, prevent energization of the apparatuses if, when the connections are made, faults such as transposed connections, and/or discontinuity in the connections, exist.

3,628,095

POWER DISTRIBUTION BUS ARRANGEMENT FOR PRINTED CIRCUIT BOARD APPLICATIONS

Leon Schwartz, Philadelphia, and William F. Simon, Ambler, both of Pa., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 2, 1970, Ser. No. 94,516
Int. Cl. H05k 1/04
U.S. Cl. 317—101 CC 5 Claims



There is disclosed herein an arrangement for connecting and holding a power distribution bus to a printed circuit board. The bus incorporates flat pads which extend from and are coplanar with it. An oversized hole in each respective pad is provided so that the respective bus may be oriented over an existing plated through hole in the printed circuit board. The leads of an integrated circuit package required to be connected to the voltage or ground potential elements of the power distribution bus are positioned both through the oversized hole of the pad and the plated through hole of the printed circuit board. The connection is made permanent by soldering.

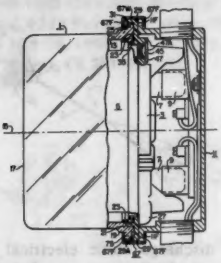
3,628,096

METER ASSEMBLY INCLUDING A COVER HAVING INTEGRAL BAYONETS AND GUARD EARS

Thomas C. Drew, Jr., and Norbert B. Watts, Jr., both of Raleigh, N.C., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 9, 1970, Ser. No. 1,589
Int. Cl. H02b 9/00
U.S. Cl. 317—107 7 Claims

An enclosure for an electric meter has a cup-shaped glass cover unit. Adjacent its open end the cover unit has spaced lugs or bayonets integral with the remainder of the cover units. A base unit is molded from a phenolic resin material for the purpose of releasably closing the open end of the cup-shaped cover unit. The base unit has a rim adjacent the open end of the cover unit and has clamps or flanges which cooperate with the lugs for the purpose of urging the cover



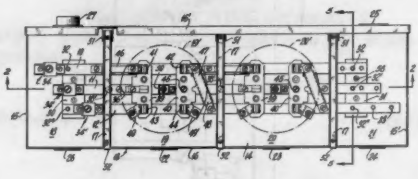
unit towards the base unit in response to relative rotation therebetween. The cover unit also has integral fins which extend into the spaces between the lugs and which project to the periphery of the base unit to assure retention of the cover unit by a conventional sealing ring or mounting cover. Contact blades may pass through the base unit for detachable reception in contact jaws of a conventional meter socket.

3,628,097

MULTIPLE-POSITION METER SOCKET

Herman H. Kobryner, Forest Hills, N.Y., assignor to Murray Manufacturing Corporation, Jericho, N.Y.

Filed Nov. 24, 1969, Ser. No. 879,156
Int. Cl. H02b 9/00
U.S. Cl. 317—107 16 Claims



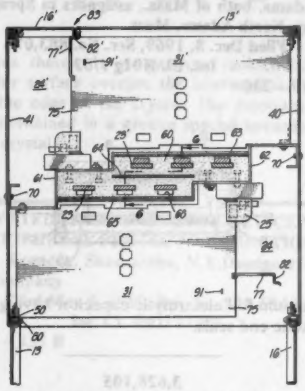
The invention contemplates employment of plural elongated bus bars in laterally spaced parallel relation extending to serve, in common, a plurality of horizontally adjacent meter-mounting zones, where different load circuits have branch connection, via their respective meters, to the bus bar lines. The bus bar assembly is unitarily mounted in an elongated meter box within which all meter-mounting zones are defined between opposed end or live supply wiring zones. The bus bar ends, where live line connections are made, are carried by insulating spacer blocks on the base or floor of the box. At each meter-mounting zone, insulating means straddles or overstands the bus bars and carries both the live jaws and the load jaws for the stab configuration of a standard plug-in meter. Various different employments of the box, in single-phase branching of single-phase and three-phase supply lines, with and without grounded neutral, will be described.

3,628,098

CABINET FOR ELECTRICAL CONTROLS WITH ENCLOSED BUS BARS AND OPPOSED DOORS

Rex E. Sturdivan, Hacienda Heights, Calif., assignor to Zinsco Electrical Products, Los Angeles, Calif.

Filed Apr. 15, 1970, Ser. No. 28,691
Int. Cl. H02b *1/06, 1/20*
U.S. Cl. 317—120 10 Claims



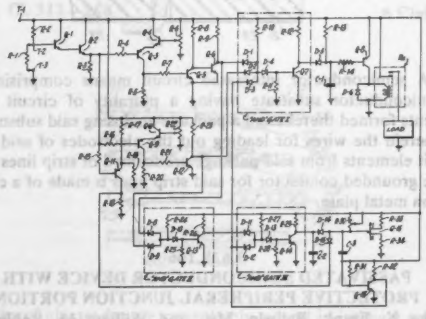
A cabinet for electrical controls or the like, typically a motor control center, with a minimum of cabinet components. A cabinet formed solely of opposed sideplates, sills and headers, all of sheet metal. A bus bar assembly positioned between the sideplates providing insulators for bus bar support, an enclosure for the bus bars and a barrier for front and rear cabinet portions. Opposed doors for the cabinet openings with the doors meeting intermediate the sideplates at a swingaway stop for access to the cabinet interior.

3,628,099

RESISTANCE-RESPONSIVE CONTROL CIRCUIT

Carl E. Atkins, Montclair, N.J., and Arthur F. Cake, Smithtown, Long Island, N.Y., assignors to Wagner Electric Corporation

Filed June 17, 1970, Ser. No. 46,984
Int. Cl. E05b *49/00*
U.S. Cl. 317—134 10 Claims



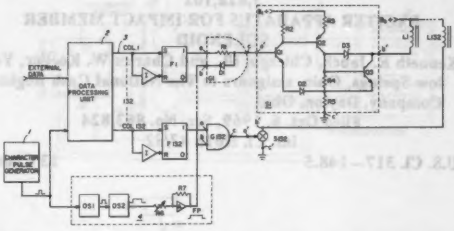
A circuit for controlling energization and deenergization of a load only in response to a value of resistance falling within a narrow predetermined range of resistances. The circuit has the capability of preventing unlocking by the insertion of a variable resistor between the terminals provided for sensing the keying resistance and hunting for the proper value of resistance.

3,628,100

HAMMER DRIVING CIRCUITS FOR HIGH-SPEED PRINTERS

John F. Zettler, Ashland, Mass., assignor to Data Printer Corporation, Cambridge, Mass.

Filed Sept. 8, 1970, Ser. No. 70,002
Int. Cl. H01h *47/32*
U.S. Cl. 317—137 15 Claims



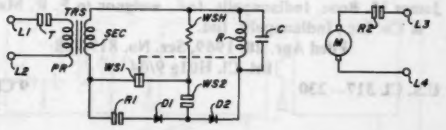
Control circuits for high-speed printers having solenoid actuated hammers, in which for each hammer the solenoid is connected through a current-control switch to a source of current, for each switch there is an AND gate having two input terminals, one being a voltage tolerant terminal connected to a register for a logic signal indicating when the hammer is to be fired, and the other being a control terminal connected to a common terminal for all of the gates that is adapted to be connected to a control pulse generator of precise level and duration.

3,628,101

DELAYED CYCLING CONTROL

Gerald E. Dietz, Milwaukee, Wis., assignor to Penn Controls, Inc., Oak Brook, Ill.

Filed June 19, 1970, Ser. No. 47,653
Int. Cl. H01h *47/18*
U.S. Cl. 317—141 R 6 Claims



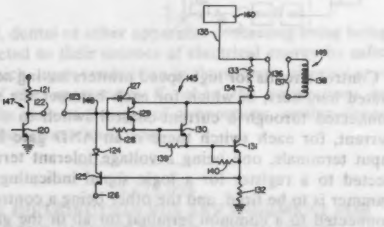
An electromagnetic relay is energized by the sequence of first energizing a warp switch sufficiently for the warp switch to close a pair of contacts in an energizing circuit for the relay. Actuation of the relay closes self-holding contacts and cams open a pair of warp switch normally closed contacts in the initiating circuit. Both the relay and the warp switch heater are maintained energized at reduced power through the self-holding relay contacts. Upon any interruption of power the control recycles after a delay of from 3½ to 5½ minutes. This relatively long delay occurs, since the relay, upon releasing,, opens its self-holding contacts necessitating that the warp switch heater cool sufficiently to place its contacts again closed for initiating starting. Starting is then initiated by again reheating the warp switch heater, thereby, providing the sequence of warp switch "cooldown" and "reheat" time intervals between cycles. The initiating warp switch normally closed contacts, once opened, cannot reclose unless the camming relay first releases to remove a mechanical block to such opening. This insures a full cooldown and heating warp switch cycle for each operation. The

control provides foolproof operation in that a "make before break" is obtained between the relay self-holding contacts and the warp switch initiating circuit contacts, since the relay self-holding contacts must close before the warp switch contacts can be cammed open. This insures that the operating control is in "run" condition before the warp switch is placed on reduced power. Upon cooldown of the warp switch, a lost motion connection of its actuator insures that the warp switch initiating contacts reclose only after its self-holding contacts have opened to insure a full reheat cycle of the warp switch for restarting.

3,628,102
EXCITER APPARATUS FOR IMPACT MEMBER SOLENOID

Kenneth E. Jauch, Chicago, Ill., and Charles W. Koeller, Yellow Springs, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Oct. 6, 1969, Ser. No. 863,824
Int. Cl. H01h 47/32
U.S. Cl. 317—148.5 **13 Claims**

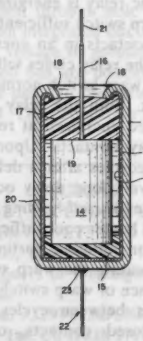


A control for current interruption and performance regulation in an electrical solenoid is disclosed. In one embodiment of the invention, solenoid current magnitude is controlled independently of supply voltage and variation in electrical element characteristics, and current magnitude is determined in a manner enabling simultaneous adjustment of current level, and solenoid force, in a plurality of similar circuits. Means for control of solenoid excitation in response to any of a plurality of solenoid performance properties is also disclosed.

3,628,103
CATHODE FOR WET ELECTROLYTE CAPACITORS

James M. Booe, Indianapolis, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Apr. 28, 1969, Ser. No. 819,788
Int. Cl. H01g 9/04
U.S. Cl. 317—230 **9 Claims**

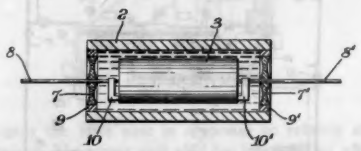


In an electrolytic capacitor, a layer of gold, platinum or gold platinum alloy constitutes the cathode, thereby permitting the capacitor to withstand reversals of polarity. Finely divided material such as carbon or platinum may be applied to the surface of the layer to increase the effective surface area of the cathode.

3,628,104
HERMETICALLY SEALED ALUMINUM ELECTROLYTIC CAPACITOR

Mark Markarian, Williamstown, and Robert J. McDonough, North Adams, both of Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Dec. 8, 1969, Ser. No. 883,076
Int. Cl. H01g 1/02
U.S. Cl. 317—230 **6 Claims**

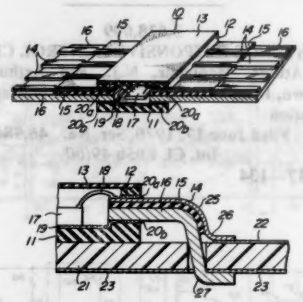


An aluminum foil electrolytic capacitor having tantalum to glass hermetic end seals.

3,628,105
HIGH-FREQUENCY INTEGRATED CIRCUIT DEVICE PROVIDING IMPEDANCE MATCHING THROUGH ITS EXTERNAL LEADS

Kaname Sakai, Kodaira-shi, and Akira Masaki, Hatano-shi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 26, 1969, Ser. No. 802,390
Claims priority, application Japan, Mar. 4, 1968, 43/13625
Int. Cl. H01l 11/00, 15/00
U.S. Cl. 317—234 R **5 Claims**



A semiconductor integrated circuit means comprising a semiconductor substrate having a plurality of circuit elements formed therein and a package enclosing said substrate, wherein the wires for leading out the electrodes of said circuit elements from said package are formed of strip lines and the grounded conductor for said strip lines is made of a common metal plate.

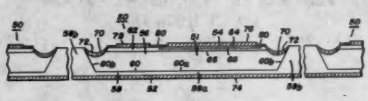
3,628,106
PASSIVATED SEMICONDUCTOR DEVICE WITH PROTECTIVE PERIPHERAL JUNCTION PORTION

John N. Frank, Ballwin, Mo., and William M. Robinson, Skaneateles, N.Y., assignors to General Electric Company

Filed May 5, 1969, Ser. No. 821,688
Int. Cl. H01l 9/12, 19/00
U.S. Cl. 317—234 R **4 Claims**

A semiconductive crystal is provided with a first zone lying adjacent a first major surface having a central portion and a

peripheral portion extending toward a remaining major surface. A second zone lies adjacent the second major surface. A central zone of higher resistivity and greater thickness than either the first and second zones lies between the zones forming junctures therewith. A passivant associated with the second major surface overlies the intersection of the junctures with the edge of the crystal. The passivant may be a glass layer contained in a groove spaced inwardly from the edge of the crystal.



3,628,107

PASSIVATED SEMICONDUCTOR DEVICE WITH PERIPHERAL PROTECTIVE JUNCTION

Richard W. Kennedy, Skaneateles, N.Y., assignor to General Electric Company

Filed May 5, 1969, Ser. No. 821,684
Int. Cl. H01l 11/10
U.S. Cl. 317—235 R **8 Claims**

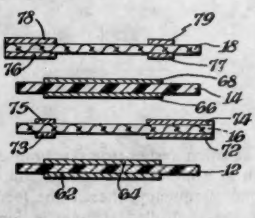
A semiconductive crystal having a central zone of relatively high resistivity is provided with glassed grooves adjacent its opposite major surfaces spaced inwardly from its edge. A peripheral zone forms a junction with the central zone spacing it inwardly from the outer edge of the crystal. A rectifying junction lies inwardly of the grooves adjacent the central zone. Both the peripheral and rectifying junctions are passivated by edge intersection with the glassed grooves.

3,628,108

CONVOLUTELY WOUND CAPACITOR

Herbert C. Craig, Stamford, Vt.; Andrew E. Dequasie, North Adams, Mass., and Raynor Linzey, Stamford, Vt., assignors to Sprague Electric Company, North Adams, Mass.

Filed May 20, 1970, Ser. No. 39,673
Int. Cl. H01g 1/11
U.S. Cl. 317—258 **6 Claims**



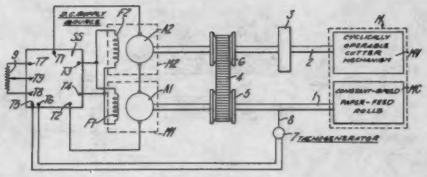
Pairs of electrodes are convolutely wound in intimate contact with interposed dielectric spacers. The winding also includes interposed double metallized insulative strips having a margined edge. The metal coatings on each strip are interconnected such that the strip margin provides a lateral dielectric extension substantially centered in the electric field of the electrode edges.

3,628,109

ELECTRIC DRIVING UNITS

Alan J. R. Plummer, London, England, assignor to Masson Scott Thrissell Engineering Limited, Masson Scott Works, Summerstown, London, England

Filed Nov. 18, 1969, Ser. No. 877,797
Claims priority, application Great Britain, Nov. 28, 1968, 56499/68
Int. Cl. H02r 7/70
U.S. Cl. 318—11 **5 Claims**



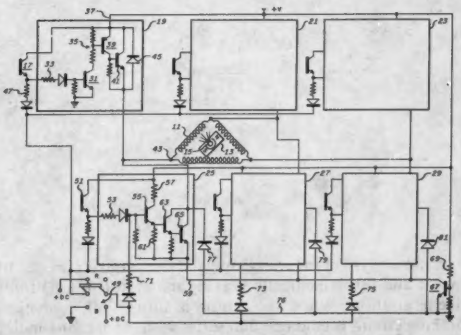
An electric driving units for a machine such as a paper cutter comprises two commutator-type electric motors, one driving a first shaft for connection to those parts of the machine presenting substantially constant torque loading and the other driving a second shaft for connection to those parts presenting variable torque loading. A belt drive, preferably with presettable ratio, couples the two shafts and the armature windings of the two motors are connected in series to one common supply, the field windings being connected to another common supply.

3,628,110

BRAKING CIRCUIT FOR BRUSHLESS DC MOTOR

William M. Casaday, Charlottesville, Va., assignor to Sperry Rand Corporation

Filed Sept. 26, 1969, Ser. No. 861,390
Int. Cl. H02p 3/12
U.S. Cl. 318—138 **5 Claims**

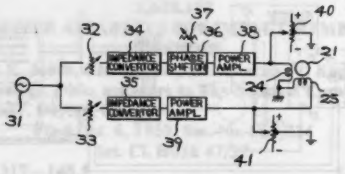


A brushless DC motor (BDCM) of the type employing a permanent magnet rotor and a wound stator and in which each side of the power supply is connected to selected portions of the stator winding through a different group of commutating switches. Braking is accomplished by applying a braking signal which serves to close all of the switches in one group and open all of the switches in the other group of the commutating switches.

3,628,111
SYSTEM FOR REMOVING IRREGULARITIES IN ROTATION FROM SYNCHRONOUS MOTOR

Kunio Goto, Tokyo, Japan, assignor to Victor Company of Japan Limited, Yokohama, Japan

Continuation-in-part of application Ser. No. 711,028, Mar. 6, 1968, now Patent No. 3,500,157. This application Dec. 3, 1969, Ser. No. 881,649
Int. Cl. H02p *5/28*
U.S. Cl. 318—179 4 Claims

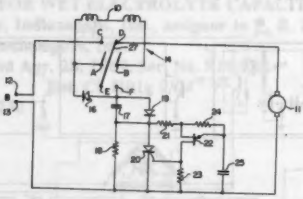


An electronic control system removes any irregularities in the rotation of an electrical motor by introducing a controlled DC bias component in the armature or field windings of the motor. The DC bias level is selected to produce a magnetic field which adds to or subtracts from the magnetic field produced by alternating current used to drive the motor. This way, the motor may receive an uneven torque which exactly compensates for any irregularity in the motor and causes the motor to run smoothly and evenly.

3,628,112
DYNAMIC BRAKING OF ELECTRIC MOTORS WITH LOAD CHANGING DURING BRAKING

Thomas A. O. Gross, Concord Road, Lincoln, Mass.

Filed June 1, 1970, Ser. No. 41,946
Int. Cl. H02p *3/14*
U.S. Cl. 318—258 11 Claims

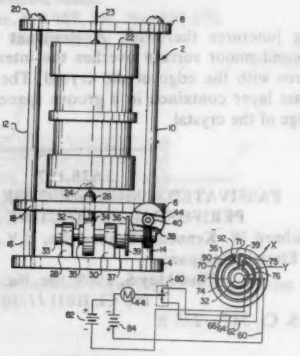


A motor system for energizing and deenergizing an electric motor and for dynamically braking the motor to a halt after deenergization. When the motor is turned off, a dynamic braking circuit is connected in series with the motor windings to assure generator action and to provide for dissipation of the kinetic energy of the motor in the form of heat. A current-limiting resistor in the braking circuit absorbs much of the energy immediately upon the initiation of braking. An electronic control circuit responds to the integral of the energy absorbed in the braking circuit. When the absorbed energy has reached a predetermined proportion of the total kinetic energy of the motor to be dissipated, the control circuit causes the current-limiting resistor to be short-circuited, thereby to permit larger currents to flow in the braking circuit, bringing the motor quickly to a halt.

3,628,113
CONTROLLED CAGING AND UNCAGING MECHANISM

Robert M. Steudl, Glen Burnie, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed May 28, 1970, Ser. No. 41,431
Int. Cl. H02p *3/06*
U.S. Cl. 318—267 2 Claims

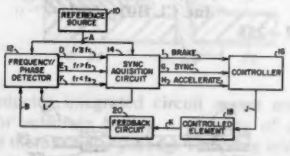


A positioning mechanism intended for remote locking and releasing of instruments having a geared down motor driving a cam, the direction and duration of motor rotation being controlled by a circular printed circuit mounted for rotation on the cam shaft, the printed circuit cooperating with a plurality of wiper contacts to effect reversal of polarity in the motor to prevent overtravel thereof.

3,628,114
SYNC ACQUISITION SYSTEM

Tamas I. Pattantyus, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 3, 1969, Ser. No. 873,568
Int. Cl. H02p *5/16*
U.S. Cl. 318—314 6 Claims



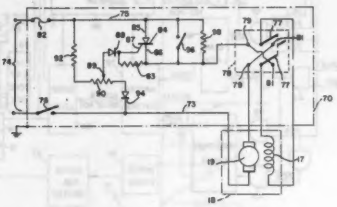
A sync acquisition system for synchronizing a controlled element, such as a motor or a voltage-controlled oscillator, with a reference frequency wherein the feedback frequency derived from the controlled element is compared with the reference frequency for providing outputs for accelerating or braking the controlled element in response to the comparison and also providing an output indicative of the phase difference between the reference and feedback frequencies so that when the controlled element is near enough to the synchronous state it is locked to the reference in response to the absence of accelerate or brake output for a predetermined time.

3,628,115

VARIABLE-SPEED HOIST CONTROL

Dana L. Pruitt, Martinsville, Ind., assignor to Uni-Light Hoist and Reel, Inc., Martinsville, Ind.

Filed June 2, 1969, Ser. No. 829,503
Int. Cl. H02p 7/28
U.S. Cl. 318—345 3 Claims



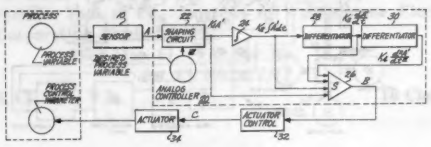
A hoist of light weight and high capacity with infinitely variable speed and holding characteristics. A sprocket engaged with a roller chain is driven through a multiple-stage spur gear reduction train by a high-speed universal reversible electric motor energized through a modified silicon control rectifier. The reduction gears are of high-tensile alloy steel, mounted on roller bearings to give an efficient drive, and the gear reduction is of such high ratio as to make the gear train irreversible under the rated load of the hoist, so that the SCR control of the high-speed motor gives positive variable-speed lifting, lowering, and holding control of the rated load. The motor control circuit includes a leakage resistor connected across the conducting electrodes of the SCR to inhibit any reversal of the motor.

3,628,116

INDUSTRIAL PROCESS CONTROL SYSTEM FOR OPERATIONS WITH LONG TIME CONSTANTS

Fritz K. Preikschat, 16020 Lake Hill Blvd., Bellevue, Wash.

Filed July 13, 1970, Ser. No. 54,534
Int. Cl. G05b 11/18
U.S. Cl. 318—590 16 Claims



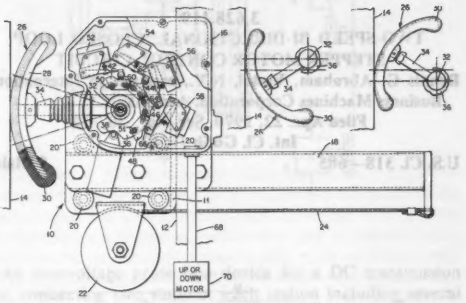
A system for providing continuous and proportional control of a process variable includes a sensor furnishing an output signal having an analog value proportional to the process variable. An analog controller includes a shaping circuit comparing that analog value with a reference to develop an error signal, and an integrator and two differentiators in series. The time constant of the integrator is chosen to filter out fast, unwanted fluctuations in the process variable and the time constants of the differentiators to approximate those involved in the process work function. The outputs of these elements of the analog controller are summed and supplied as a control signal to an actuator control circuit which varies the power supplied to an actuator so as to proportionally control a control parameter of the process. In turn, changes in the control parameter bring the process variable back to its desired value. An embodiment of the analog controller uses tantalum capacitors and high impedance operational amplifiers. Embodiments of the actuator control circuits for use with AC synchronous stepping motors and DC motors include an integrator which eliminates any dead band in the actuator's response to the control signal.

3,628,117

AUTOMATIC LEVELLER SWITCHING SERVOMOTOR CONTROL CIRCUIT

Walter S. Eggert, Jr., Huntingdon Valley, Pa., assignor to Boothe Airside Services, Inc.

Filed Mar. 2, 1970, Ser. No. 15,537
Int. Cl. G05b 11/01
U.S. Cl. 318—675 4 Claims



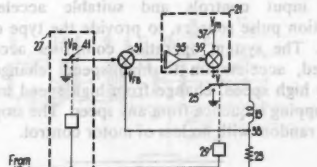
An automatic levelling device is employed to maintain two movable bodies in the same relative positions with respect to each other. When the position of one body changes in a given plane, motor means are actuated to restore the bodies to their original relative positions.

3,628,118

ELECTRICAL CIRCUITRY FOR USE E.G. IN FORCE BALANCE SERVOSYSTEMS

Peter Michael Knight, and Michael John Tooze, both of Kent, England, assignors to Elliott Brothers (London) Limited, London, England

Filed Oct. 7, 1969, Ser. No. 864,411
Claims priority, application Great Britain, Oct. 9, 1968, 47,813/68
Int. Cl. G05b 11/01
U.S. Cl. 318—676 4 Claims



The invention is concerned with electrical circuitry for ensuring that the mean current through a load, e.g. a force balance winding for a pressure transducer, bears a substantially linear relationship to the mark/space ratio of pulse width modulated signals whose mark/space ratio varies e.g. with an error signal developed at a pickoff of the pressure transducer.

The circuitry comprises an integrator, a load, e.g. the aforementioned winding, a current-sensing resistor in series with the load, a switch which connects the load to the said circuit means or to circuit earth, a source of the aforemen-

tioned p.w.m. signals, means for operating the switch to connect the load to the said circuit means or to circuit earth accordingly as the p.w.m. signals are at one voltage level or the other, and a comparator which receives the p.w.m. signals and the voltage at the junction between the load and the current-sensing resistor and which supplies to the integrator a voltage which represents the difference between the p.w.m. signals and the junction voltage.

The time constant of the integrator is chosen in relation to the cycle time of the p.w.m. signals so as to ensure that variation in load current, arising, e.g. as a result of temperature variations, gives rise to a voltage change at the output of the integrator such change ensuring that the mean load current bears the aforestated relationship to the mark/space ratio of the p.w.m. signals.

3,628,119

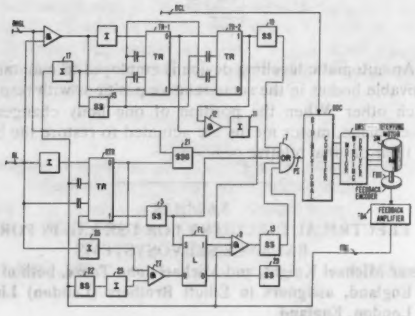
TWO-SPEED BI-DIRECTIONAL, CLOSED LOOP STEPPER MOTOR CONTROL CIRCUIT

Dennis G. Abraham, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 22, 1970, Ser. No. 30,754

Int. Cl. G05b *19/40*

U.S. Cl. 318—685 **5 Claims**



Two-speed bidirectional, closed loop stepping motor control is obtained, utilizing only a single feedback encoding device. The feedback signals are combined logically with suitable input controls and suitable acceleration and deceleration pulse sources, to provide the type of operation required. The system operation comprises acceleration to low speed, acceleration to high speed, change from high speed to low speed, change from high speed to low speed, and a stopping sequence from any speed. The stop signal may occur at random with no loss of motor control.

3,628,120

CLOSED LOOP STEPPING MOTOR CONTROL SYSTEM WITH SEEK REFERENCE CAPABILITY

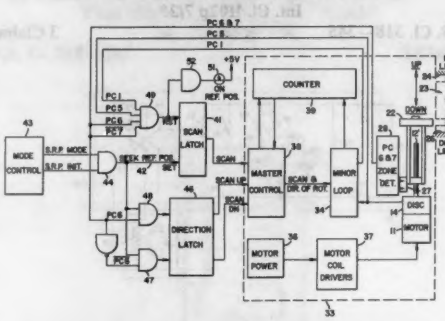
Thorbjoern Roland Fredriksen, Sunnyvale, Calif., assignor to Electroglas, Inc., Menlo Park, Calif.

Filed Dec. 22, 1969, Ser. No. 886,866

Int. Cl. G05b *19/40*

U.S. Cl. 318—685 **5 Claims**

A closed loop stepping motor control system provides seek reference position capability. A disc discriminator on the output shaft of the stepping motor includes a single aperture to indicate a unique step in a single revolution. A unique single revolution is indicated by the use of a mechanical slider mounted on a linearly moving carriage in conjunction with appropriate cutouts and photocells; alternatively a limit switch is used. Appropriate logic provides for stopping the stepping motor when the reference position has been reached.



3,628,121

POTENTIOMETER SELF-SYNCHRONOUS MOTOR CONTROL SYSTEM

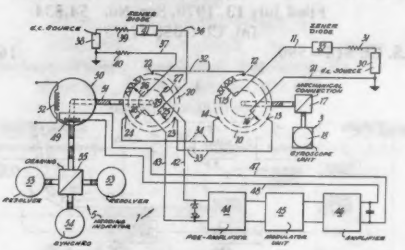
Kenneth Victor Diprose, 3 Cliffe Drive, Limpley Stoke, Bath, Somerset, England

Filed Nov. 6, 1968, Ser. No. 773,763

Claims priority, application Great Britain, Nov. 6, 1967, 50,423/67

Int. Cl. G05b *11/12*

U.S. Cl. 318—693 **7 Claims**



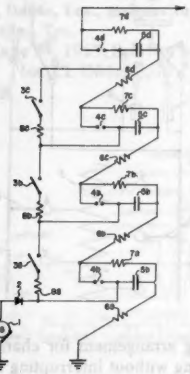
Apparatus for transmitting angular information with improved accuracy is disclosed as applied to transmitting the heading of a gyrocompass from the compass to a remote indicator. A transmitter potentiometer is connected at three spaced contact points to three similarly spaced points on a receiver potentiometer by three lines which can constitute the sole connection between the potentiometers. A first pair of rotatable brushes, oriented in accordance with the heading, feed a given potential to the transmitter potentiometer and a second pair of rotatable brushes feed on equal potential to the receiver potentiometer. A third pair of receiver brushes, orthogonal to the second pair, are connected to a servomechanism arranged to rotate the two pairs of receiver brushes until the third pair senses zero potential, when the first and second pairs of brushes are similarly oriented with respect to the three spaced contact points of the two potentiometers.

3,628,122

MULTISTAGE MARX IMPULSE GENERATOR CIRCUIT COMPRISING CHARGING SWITCH AND PROTECTIVE RESISTORS

Arnold Rodewald, Riehen near Basel, Switzerland, assignor to Emil Haefely & Cie. AG, Basel, Switzerland

Filed May 13, 1969, Ser. No. 824,124
Claims priority, application Switzerland, May 16, 1968, 7239/68
Int. Cl. H02m 7/32
U.S. Cl. 320—1 2 Claims



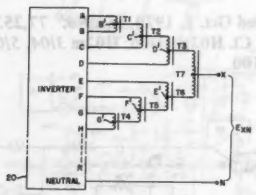
A multistage Marx impulse generator circuit to which protective resistors are connected in series or in parallel with charging switches. The ohmic value of the protective resistors are chosen so that in the case of premature flashover across a spark gap, the energy stored in the generator can be absorbed by the protective resistors.

3,628,123

APPARATUS FOR HARMONIC NEUTRALIZATION OF INVERTERS

John Rosa, Pittsburgh, and Theodore M. Heinrich, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 11, 1970, Ser. No. 18,549
Int. Cl. H02m 1/12
U.S. Cl. 321—9 R 10 Claims



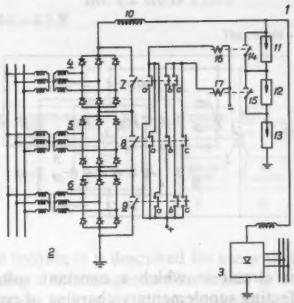
Apparatus for neutralizing harmonic components of DC to AC power inverter systems utilizing a pyramidal scheme of interconnection of interphase transformers operatively connected to a plurality of individual inverter stages comprising a power inverter system.

3,628,124

VARIABLE OVERVOLTAGE PROTECTION MEANS FOR DC NETWORKS

Arne Johansson, Grangesberg, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Oct. 9, 1970, Ser. No. 79,454
Claims priority, application Sweden, Oct. 10, 1969, 13917/69
Int. Cl. H02m 1/18; H02h 7/12
U.S. Cl. 321—14 3 Claims



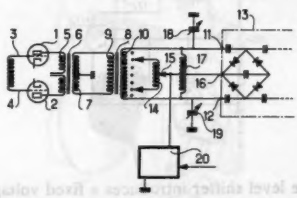
An overvoltage protection device for a DC transmission line connecting two stations, each station including several series-connected converters each provided with a bypass member, has a series of lightning arrester units connected between the transmission line and earth. At least all but one of the lightning arresters has a bypass device. Relays for closing the bypass devices to short circuit the lightning arresters are connected to the bypass members for the converters in such a way that the number of bypassed lightning arresters corresponds to the number of bypassed converters.

3,628,125

DIRECT CURRENT HIGH-VOLTAGE GENERATOR

Paul Dedieu, Bourg-la-Reine, France, assignor to Societe Alsacienne de Constructions Atomiques, de Telecommunications et d'Electronique (Alcatel), Paris, France

Filed Jan. 18, 1971, Ser. No. 107,181
Claims priority, application France, Jan. 16, 1970, 7001609
Int. Cl. H02m 7/00
U.S. Cl. 321—15 8 Claims

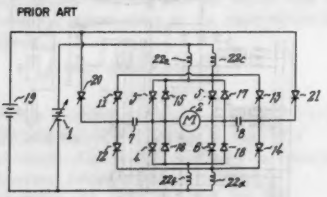


A direct current voltage generator which makes it possible to reduce the residual undulations originating from the alternating current source therein, including a first and a second transformer connected to a generator of the Cockroft-Walton type, two variable capacitors, and a coil with a slide contact connected to the secondary circuit of the second transformer for reducing the residual undulations at the supply frequency and an inductance for tuning the parasitic capacitances of the secondary circuit.

3,628,126
SUPPLEMENTARY CHARGE CIRCUIT FOR DC-TO-AC CONVERTER

Chuji Kawakami; Ichiro Kouzuma, and Yoshisada Sugai, all of Tokyo, Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Dec. 2, 1969, Ser. No. 881,518
Claims priority, application Japan, Dec. 6, 1968, 43/89448
Int. Cl. H02m 7/52
U.S. Cl. 321—45 C 1 Claim

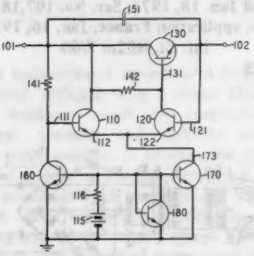


An inverter circuit in which a constant voltage power source for effecting supplementary charging of commutation capacitors is provided separately from a variable voltage direct current power source so as to supply a supplementary charge voltage from said constant voltage power source to said commutation capacitors through supplementary charge thyristors at all times.

3,628,127
VOLTAGE LEVEL SHIFTER CIRCUIT WITH CURRENT RATIO CONTROL OF TRANSCONDUCTIVE IMPEDANCE OF SEMICONDUCTOR

Frederick Donald Waldhauer, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 27, 1970, Ser. No. 32,050
Int. Cl. G05f 1/56
U.S. Cl. 323—9 8 Claims

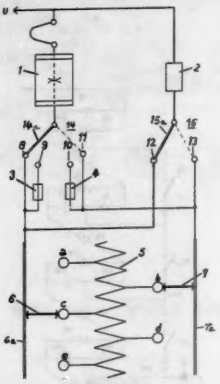


A voltage level shifter introduces a fixed voltage shift into a transmitted signal by controlling the transconductive impedance of a regulator transistor. The magnitude of the voltage shift is determined by a reference voltage drop established across an impedance energized by a constant-current source. A differentially coupled pair of transistors comprise a feedback network to compare the voltage level shift to the reference voltage and adjust the transconductive impedance of the regulator transistor accordingly. The basic voltage level shifter may be connected symmetrically in a four-terminal circuit arrangement with a common reference voltage control to generate a balanced voltage level shift free of longitudinal drift signals.

3,628,128
STEP-SWITCHING ARRANGEMENT

Karl Buhler, Nussbaumen, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Mar. 6, 1970, Ser. No. 17,071
Claims priority, application Switzerland, Mar. 11, 1969, 3622/69
Int. Cl. H02p 13/06; G05f 1/14
U.S. Cl. 323—43.5 R 1 Claim



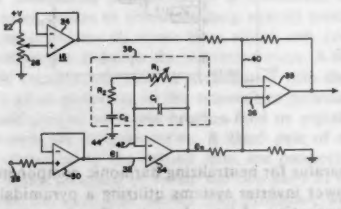
A step-switching arrangement for changing the taps on a transformer winding without interrupting the flow of current from the winding to a loadline includes a first switch and a resistance connected in series therewith extending from the transformer tap-changing contacts to the loadline which is paralleled by a changeover switch and vacuum switch connected in series therewith also extending from the transformer tap changing contacts to the loadline. A circulating current through the switches and resistance and part of the transformer winding occurs during a change in taps and this circulating current is normally interrupted by opening the contacts of the vacuum switch.

Should the vacuum switch fail to open and interrupt the circulating current, then as the changeover switch is actuated from one main contact to the other, the circulating current will be caused to flow from an auxiliary contact on this switch through an auxiliary circuit which includes a fuse. Blowing of the fuse interrupts the circulating current and thus takes over the function of the failing vacuum switch.

3,628,129
PROCESS CONTROLLER INCLUDING A RATE CIRCUIT RESPONSIVE SOLELY TO PROCESS VARIABLE SIGNAL CHANGES

John E. Riley, Saugus, Mass., assignor to General Electric Company

Filed Oct. 1, 1970, Ser. No. 77,253
Int. Cl. H02p 13/16; H02m 3/04, 5/04
U.S. Cl. 323—100 5 Claims



An improved process controller wherein rate action occurs only during changes in the process variable signal. The

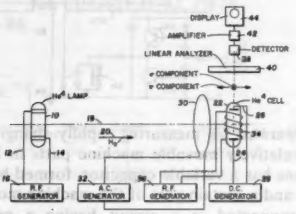
process variable signal is applied to one input terminal of a first differential amplifier having a rate circuit connected in a feedback loop between the output terminal and the second input terminal of the amplifier. The first differential amplifier provides one input to a second differential amplifier, a second input to which is provided by a setpoint signal source. Proportional and reset action may be applied to the output signal of the second differential amplifier.

3,628,130

METHOD AND APPARATUS FOR MEASURING THE ALIGNMENT OF METASTABLE HE ATOMS BY DETECTION OF SCATTERED RESONANCE RADIATION

Laird D. Schearer, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed June 29, 1967, Ser. No. 649,882
Int. Cl. G01r *33/08*
U.S. Cl. 324—0.5 R **4 Claims**



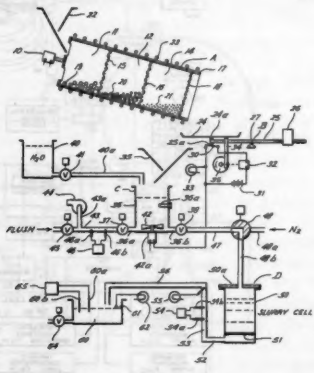
A magnetometer having He^4 atoms excited to the metastable 2^3S_1 state is radiated with unpolarized resonance radiation to align the atoms in the metastable state. The scattered resonance radiation issuing from the He^4 atoms in the metastable state is sensed to provide an indication of the alignment of the atoms. A differential function of two polarized components of the scattered resonance radiation may be generated to provide an output signal that is generally free from noise.

3,628,131

APPARATUS FOR DETERMINING SALINITY VARIATIONS IN SHALES

Harold L. Overton, 5418 Whispering Creek, Harris County, Tex.

Filed Mar. 2, 1970, Ser. No. 15,514
Int. Cl. G01n *27/00*
U.S. Cl. 324—30 R **10 Claims**



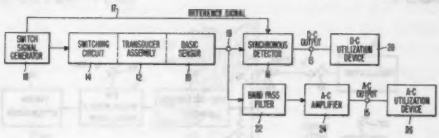
An apparatus for determining salinity variations in shales, automatically or semiautomatically, to substantially continuously measure the variations of the salinity of water from different elevations in a well.

3,628,132

THIN MAGNETIC FILM MAGNETOMETER WITH ZERO-FIELD REFERENCE

Richard L. Fussell, Chester Springs, and Clifford J. Bader, West Chester, both of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 31, 1969, Ser. No. 872,967
Int. Cl. G01r *33/02*
U.S. Cl. 324—43 R **15 Claims**



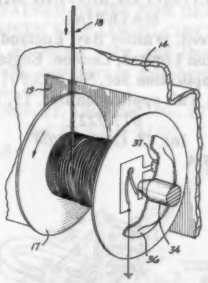
A circuit technique is described for use with a mangetometer employing a thin magnetic film sensor in an inductance-variation mode, to provide an accurate determination of the absolute value of an external applied field. The technique includes the use of switching means coupled to the thin magnetic film for periodically reversing the state or sense of the film. In the absence of an external field, that is, with zero applied field, the magnetometer output remains at a constant reference level. In the presence of an external field, the magnetometer output is an alternating current signal having an amplitude proportional to the field magnitude and a phase corresponding to the polarity or direction of the field.

3,628,133

METHODS OF AND APPARATUS FOR DETECTING AND LOCATING OPENS IN CONDUCTORS INCLUDING A SIGNAL GENERATOR MOVABLE WITH THE CONDUCTORS

Georg C. E. Dornberger, Phoenix, Ariz., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed June 29, 1970, Ser. No. 50,855
Int. Cl. G01r *31/08*
U.S. Cl. 324—52 **18 Claims**



A length of a twisted pair of conductors, which has been wound onto a reel, is tested while the reel is stationary to determine whether either or both of the conductors is open. If any opens are detected, the reel is mounted in a driven, rewinding system to move successive portions of the twisted pair of conductors through a signal-detecting electrode. The pair of conductors is connected to an oscillator which is mounted within the rewinding system without the need of slip rings or the like. The electrode is connected to a detector circuit which controls a meter-relay device to turn off the re-

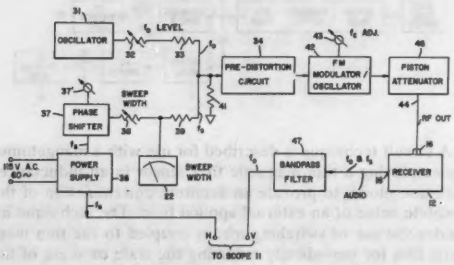
winding system when an open passes through the electrode. Facilities are provided for removing the open portion of the pair of conductors from the electrode for repair purposes and the return of the repaired conductors to the electrode to permit a continuation of the rewinding cycle to locate additional opens.

3,628,134

FREQUENCY MODULATION ALIGNMENT SYSTEM

Robert A. Andersen, Palo Alto, Calif., assignor to Sound Technology, Cupertino, Calif.

Filed June 17, 1970, Ser. No. 46,982
Int. Cl. G01r *29/00*; H03c *3/08*
U.S. Cl. 324—57 R **7 Claims**



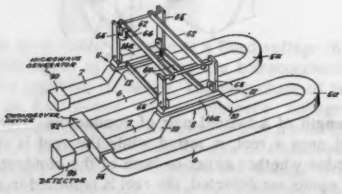
A frequency modulation alignment system modulates a carrier signal, which is tuned to the same frequency as FM receiver to be tested, with dual frequencies, one of which is a relatively low-sweep frequency and the other of which is a higher audio frequency. The vertical input of an oscilloscope is coupled to the audio frequency which has been demodulated by the receiver. The horizontal input is driven by the sweep frequency to produce a pattern where distortion is indicated by the variation from a horizontal line of the peaks of the signal display. An effectively linear modulator is provided for the generation of the modulated carrier signal by a modulator which has its modulating signal predistorted to compensate for its own nonlinearities. A piston attenuator controls the RF output of the modulated carrier signal.

3,628,135

CRANKED HOLLOW WAVEGUIDE FOR MEASURING MOISTURE CONTENT OF MOVING SHEET OR WEB MATERIAL

William Charles Reed, Whitley Bay, England, assignor to The Rank Organisation Limited, London, England

Continuation of application Ser. No. 633,901, Apr. 26, 1967, now abandoned. This application Dec. 15, 1969, Ser. No. 877,922
Int. Cl. G01n *27/04*
U.S. Cl. 324—58.5 A **11 Claims**



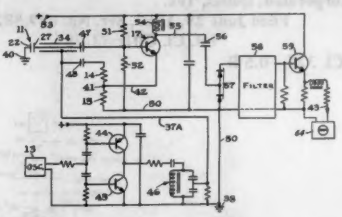
The invention is concerned with the measurement of moisture content by microwave transmission through a sheet or web of material and the specification discloses a split form of waveguide to embrace the sheet, the waveguide having a cranked configuration portion at one or both ends allowing the edge regions of the sheet to be excluded from the measurement region. The split portions of the waveguide are displaceable away from each other to allow an obstruction to pass between them.

3,628,136

MEANS FOR MEASURING CLEARANCES IN A GAS TURBINE INCLUDING A COAXIAL CABLE CAPACITOR

Robert P. Jonas, Phoenix, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Sept. 5, 1969, Ser. No. 855,474
Int. Cl. G01r *27/26*
U.S. Cl. 324—61 **11 Claims**



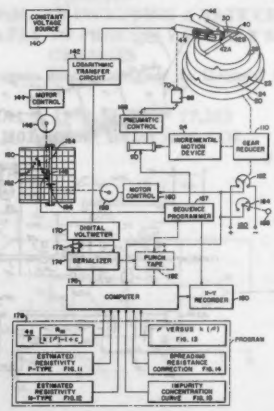
This apparatus for measuring rapidly changing clearances between relatively movable machine parts in high-temperature regions has a variable capacitor, formed by a stationary electrode and a certain part of the machine movable relative thereto, connected in a circuit having a relatively fixed capacitor provided by a coaxial cable the center conductor of which constitutes a lead to the electrode, a source of high-frequency excitation voltage, a voltage divider, a transistor, a load resistor, and suitable means for translating variations in capacitance of the variable capacitor due to relative movement of the machine parts into indications of measurement of the spacing between the machine parts.

3,628,137

APPARATUS FOR AUTOMATICALLY DETERMINING SPREADING RESISTANCE, RESISTIVITY AND IMPURITY CONCENTRATION IN SEMICONDUCTOR BODIES

Robert G. Mazur, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 24, 1969, Ser. No. 879,342
Int. Cl. G01n *27/14*
U.S. Cl. 324—64 **12 Claims**



Apparatus for and method of performing spreading resistance measurements on semiconductor wafers to quantita-

tively assess the electrical conductivity of the material of the wafer whether it be laterally on a surface to determine material homogeneity or traversely through the thickness of the wafer to obtain a profile of resistivity versus position. Means are provided in the apparatus for automatically computing the resistivity and/or the impurity concentration in the wafer from the resistance measurements obtained whereby plots of these latter parameters are made to show lateral variations in the material characteristics as well as showing the profile of resistivity and/or impurity concentration versus the distance from a reference plane of the sample.

3,628,138

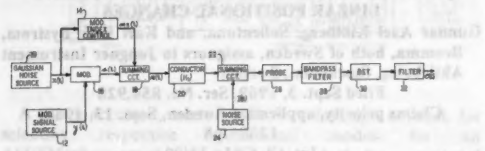
METHOD FOR IDENTIFYING CONDUCTORS IN A CABLE BY UTILIZING AN AMPLITUDE-MODULATED GAUSSIAN NOISE IDENTIFICATION SIGNAL

Garret Braden Collier, River Vale, and George Edward Harrington, Chatham, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 2, 1970, Ser. No. 7,914

Int. Cl. G01r *31/02, 19/16*

U.S. Cl. 324—66 **1 Claim**



A method of identifying conductors in a multiconductor cable without interference with service thereon utilizes Gaussian noise. The Gaussian noise is amplitude modulated by an audible tone to generate an inaudible test signal which is placed on a conductor at some location, such as a central office, where the identity of the conductor is known. At some other location where the identity of the conductor within the multiconductor cable is desired, for example at a splice point, the signal can be detected by an appropriate detection apparatus to thereby identify the specific conductor.

3,628,139

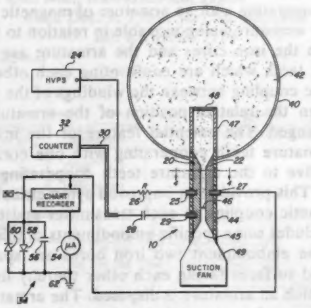
METHOD AND APPARATUS FOR SENSING PARTICULATE MATTER

Henry J. Huber, Newton Highlands, Mass., assignor to Ikor, Incorporated, Burlington, Mass.

Filed June 11, 1970, Ser. No. 45,355

Int. Cl. G01n *27/00*

U.S. Cl. 324—71 R **19 Claims**



A method and apparatus for sensing particulate matter in a fluid by application of an electrical field of sufficient potential to a flowing fluid so that a particle contained in the fluid causes an avalanche breakdown of the fluid dielectric. The breakdown rate is determined by the rate of particle flow through the field.

3,628,140

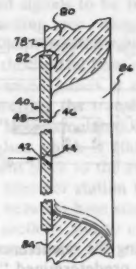
SCANNING ELEMENT AND APERTURE WAFER FOR ELECTRONIC PARTICLE COUNTING AND SIZING APPARATUS

Walter R. Hogg, Miami Lakes, and Wallace H. Coulter, Miami Springs, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Nov. 6, 1969, Ser. No. 874,632

Int. Cl. G06m *11/00*

U.S. Cl. 324—71 CP **9 Claims**



An aperture wafer which is adapted to be mounted to an aperture tube scanning element for use with a Coulter-type electronic particle counting and sizing apparatus. The wafer is formed of the usual materials such as ruby, sapphire and the like. The aperture is located substantially in the center of the wafer and dimensioned as conventionally formed apertures in known wafers, but differs from the prior art by having the body of the wafer thickened as much as feasible contiguously to the aperture. The configuration of the resulting structure provides a conical chamber leading to the aperture, which consequently is located at the apex of the chamber. The chamber and aperture are symmetrical about the aperture axis. The aperture wafer provides decreased capacitive losses and also focuses the field of the aperture giving increased resolution without substantial loss in sensitivity. The scanning element has the wafer mounted thereto with the chamber opening to the inside of the aperture tube.

3,628,141

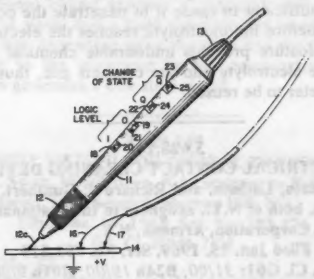
SELF-CONTAINED PROBE FOR DELINEATING CHARACTERISTICS OF LOGIC CIRCUIT SIGNALS

Russell B. Union, Mountain View, and Donald J. Nagy, San Jose, both of Calif., assignors to Advanced Digital Research Corporation, Los Altos, Calif.

Filed Nov. 17, 1969, Ser. No. 877,302

Int. Cl. G01r *31/02*

U.S. Cl. 324—72.5 **13 Claims**



A self-contained probe for delineating the characteristics of logic circuit signals includes a "0" and "1" logic level cir-

cuit portion for indicating the absolute logic level of the monitored signal and a change of state portion which includes a JK flip-flop for alternately illuminating two light source indicators to indicate, for example, pulse repetition rate.

3,628,142

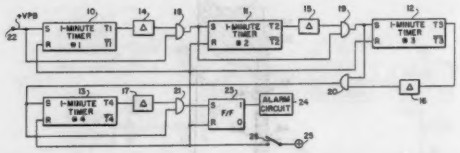
SLIDING INTERVAL EVENT DETECTOR

George J. Harris, Middlesex, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Nov. 18, 1969, Ser. No. 877,637

Int. Cl. G01r *23/02*; G04f *9/00*

U.S. Cl. 324—78 Q **5 Claims**



A system for detecting the occurrence of a predetermined number of pulses in a predetermined "sliding" test time interval. A plurality of timers is provided each having a timing interval equal to the test time interval. Each input pulse sets one of the timers. To detect N pulses in the test time interval, N–1 timers are required; if a pulse is detected while all of the timers are energized then it is an indication that N pulses have occurred within the test time interval.

3,628,143

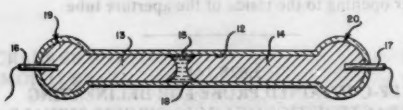
REUSABLE MERCURY COULOMETER

Richard G. Di Paola, Newtown, Conn., assignor to Curtis Instruments Inc., Mount Kisco, N.Y.

Filed June 22, 1970, Ser. No. 48,191

Int. Cl. G01r *11/44*; G04f *11/08*

U.S. Cl. 324—94 **4 Claims**



A mercury coulometer is provided with a bore having a capillary central portion and end portions which are sufficiently enlarged that the gravitational force acting on the mercury is sufficient to cause it to penetrate the coulometer electrolyte before the electrolyte reaches the electrical contacts. This feature prevents undesirable chemical reactions between the electrolyte and the contacts and, thus, permits the coulometer to be reused.

3,628,144

ELECTRICAL CONTACT CLEANING DEVICE

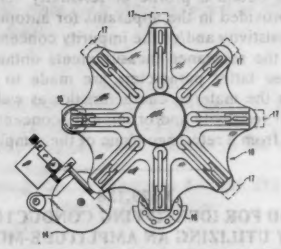
Jesse Aronstein, Latham, and Richard J. Gunthert, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 15, 1969, Ser. No. 791,219

Int. Cl. G01r *31/00*; B24b *19/00*; H01h *9/00*

U.S. Cl. 324—158 F **17 Claims**

Electric contacts, which are utilized in testing semiconductor chips or the like, become contaminated by deposits left on the contacts by the chips during testing. These contaminants are removed by cleaning means movable by the chip handling equipment. After the contacts have been cleaned, the debris is removed by an air jet.



3,628,145

INDUCTIVE APPARATUS FOR INDICATING MECHANICAL POSITIONS AND/OR MEASURING LINEAR POSITIONAL CHANGES

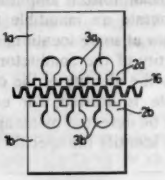
Gunnar Axel Kihlberg, Sollentuna, and Karl Erik Bystrom, Bromma, both of Sweden, assignors to Jungner Instrument Aktiebolag, Stockholm, Sweden

Filed Sept. 3, 1969, Ser. No. 854,928

Claims priority, application Sweden, Sept. 13, 1968, 12380/68

Int. Cl. G01r *33/00*

U.S. Cl. 324—34 D **1 Claim**



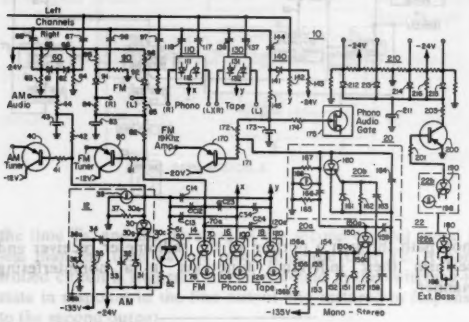
The invention relates to an improved inductive transmitter for indicating and measuring linear position changes comprising at least two iron cores each with primary and secondary windings cooperating with an armature of magnetic material, the cores or armature being movable in relation to the transmitter. Both the iron cores and the armature are provided with spaced teeth which are confronting each other so that the magnetic coupling between the windings of the cores will change when the relative position of the armature to the cores is changed. The essential feature of the invention is that the armature teeth cooperating with one core are displaced relative to the armature teeth cooperating with the other core. This provides an improved symmetrical function of the magnetic coupling in each transmitter and the invention also includes some specific embodiments of this arrangement. In one embodiment two iron cores are spaced with their toothed surfaces facing each other thereby forming an airgap in which an armature is disposed. The armature could be in the form of a corrugated strip so that the armature teeth cooperating with one iron core will form the slots cooperating with the other iron core which means that the teeth cooperating with the two iron cores will be exactly 180 degrees displaced in relation to each other.

3,628,146

TOUCH-ACTUATED MODE CONTROL CIRCUIT

Orval E. Beckman, Wheaton, and Walter Klymkiw, Chicago, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed May 22, 1970, Ser. No. 39,835
Int. Cl. H04b 1/16
U.S. Cl. 325—315 14 Claims



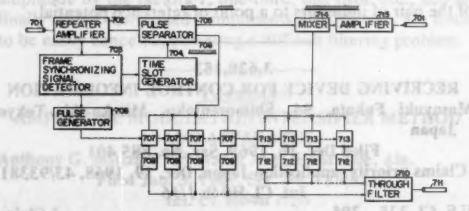
A touch-actuated, master control or function network for selecting respective operational modes for an AM/FM/phonograph/tape complex, including optional monostereo and extended bass modes. The control network includes a plurality of functionally interrelated, solid-state switching circuits having a silicon controlled rectifier (SCR) as the operative control element. When one of the basic operational modes (AM, FM, phono, tape) is selected, provision is made to automatically deactivate or cutoff any of the switching elements of the remaining modes if previously in an operative condition. Provision is also made to prevent selection of the optional stereo mode while the complex is in the basic AM operational mode. The individual SCR switching circuits are effectively controlled by voltage level changes produced upon contacting an associated touch-responsive element in conjunction with an included storage capacitor in the gating circuit of the particular SCR. Such arrangement provides immunity to false operation of the switching circuits due to extraneous noise pickup, transients and the like.

3,628,147

TIME-DIVISION MULTIPLEX MOBILE COMMUNICATION SYSTEM

Kenichi Makino, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Dec. 9, 1969, Ser. No. 883,448
Int. Cl. H046 7/14
U.S. Cl. 325—4 7 Claims



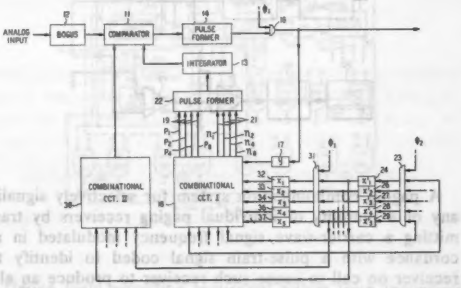
A time-division multiplex mobile communication system allowing communications to be made between a plurality of railroad trains travelling on a predetermined railroad line and a central base station through a plurality of repeater stations set up at a substantially equal distance along the line, which comprises means for carrying out communications between the central base station and each repeater station by a series of high-speed time-division multiplex signals, means for allowing each repeater station to translate series of high-speed pulses included in the signals thus transmitted which is directed to the repeater station into a series of slow pulses and modulating by the translated slow pulses a carrier wave allotted to each train which has as high a frequency as possible and radiating the output signal to each corresponding train through a radiation transmission line, means for allowing the supplied signals to be demodulated at each corresponding train, means for allowing return signals consisting of a series of slow pulses prepared by each train separately from the demodulated signals to be transmitted in a reverse direction to the preceding case, namely, from the radiation transmission line to each repeater station, means for allowing the return signals to the central base station to be translated into a series of high-speed pulses at each corresponding repeater station and inserting the translated high-speed pulses into that of the time slots associated with the series of time-division multiplex pulses which is allotted to other repeater stations so as to be sent back to the central base station and means for bringing a repeater station to be prepared to have communication links between base station and trains existing in adjacent repeater sections and to complete uninterrupted communications at the moment the trains enter said repeater section.

3,628,148

ADAPTIVE DELTA MODULATION SYSTEM

Stephen J. Brolin, Bronx, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 23, 1969, Ser. No. 887,657
Int. Cl. H03k 13/22
U.S. Cl. 325—38 B 6 Claims



An adaptive delta modulation system is characterized by an encoder algorithm having a plurality of unique states. A combinational circuit receives a feedback signal from the transmitted signal and a state signal on the basis of which a step of a size dependent upon the state and the transmission is applied to the integrator by the combinational circuit, which also generates a new state signal.

3,628,149

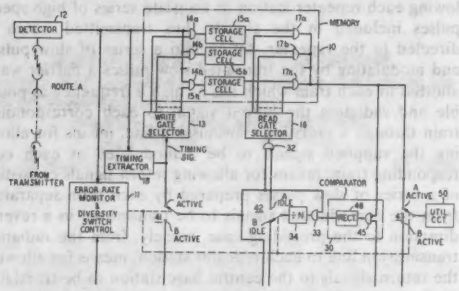
DIVERSITY SWITCH FOR DIGITAL TRANSMISSION

George H. Swan, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 19, 1968, Ser. No. 785,274
Int. Cl. H04b 7/02
U.S. Cl. 325—42 9 Claims

A jittering idle channel is tracked to a jittering active channel and diversity switching to the idle channel is provided without loss of a bit. The signal received in the idle channel is written into an elastic store bit-by-bit as it is received; the signal is read out in the order in which it was written at times

determined by a timing signal derived from the active signal and modified under control of an error signal indicating a



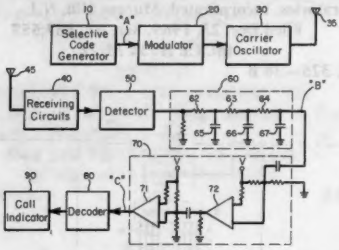
timing difference between the signals on the active and idle channels. There is no built-in preference for one channel, thus either channel may track the other.

3,628,150

SELECTIVE PAGING SYSTEM

Alfred R. Ditthardt, Skokie, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Aug. 3, 1970, Ser. No. 60,472
Int. Cl. H04b 1/00
U.S. Cl. 325—55 **8 Claims**



A paging communication system for selectively signaling any of a plurality of individual paging receivers by transmitting a carrier-wave signal frequency modulated in accordance with a pulse-train signal coded to identify the receiver on call to cause such receiver to produce an alert signal. Each of the receivers has a low-pass filter with a cutoff frequency substantially equal to twice the repetition rate of the coded pulse-train modulating signal for converting the detected calling-code signal to a substantially noise-free continuous-wave signal having different amplitude levels reflecting the code represented by the detected signal. The repetition rate of the modulating signal is made substantially equal to 100 hertz.

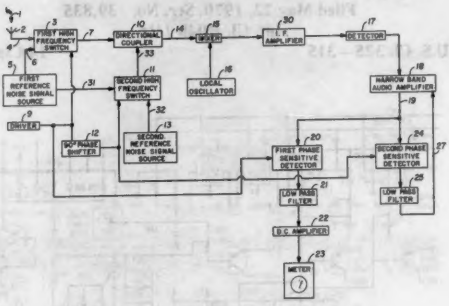
3,628,151

RADIOMETER GAIN CONTROL

Robert S. Roeder, Dunedin, Fla., assignor to Sperry Rand Corporation

Filed Jan. 8, 1970, Ser. No. 1,497
Int. Cl. H04b 1/06
U.S. Cl. 325—363 **12 Claims**

An improved microwave radiometer of the comparison type features elimination of loss of calibration due to long term gain changes through the addition of a quadrature modulation signal path in the comparison radiometer as a means of coupling a fixed gain control reference signal into the radiometer receiver. The reference signal is ultimately separated at the output of the receiver and provides a feedback signal to correct for all undesired receiver gain changes. The radiometer and gain control signals enjoy use of a com-



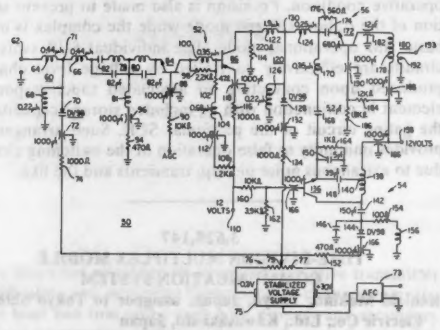
mon path through a portion of the radiometer receiver and perform their individual functions in a noninterfering manner.

3,628,152

TELEVISION TUNING CIRCUIT UTILIZING VOLTAGE VARIABLE CAPACITANCE

David J. Carlson, Indianapolis, Ind., assignor to RCA Corporation

Continuation of application Ser. No. 756,601, Aug. 30, 1968, now abandoned. This application Feb. 25, 1970, Ser. No. 14,762
Int. Cl. H04b 1/18
U.S. Cl. 325—383 **9 Claims**



A tunable resonant circuit includes a pair of inductors serially connected between input and output terminals. The parallel combination of a third inductor and a voltage-responsive capacitance device are coupled from the junction of the pair of inductors to a point of reference potential.

3,628,153

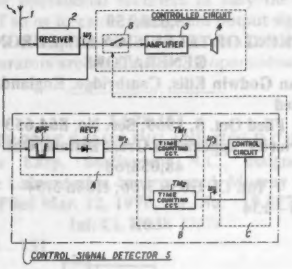
RECEIVING DEVICE FOR CONTROL INFORMATION

Masayuki Fukata, 94, Shimorenjaku, Mitaka-shi, Tokyo, Japan

Filed Dec. 16, 1969, Ser. No. 885,401
Claims priority, application Japan, Dec. 19, 1968, 43/93381
Int. Cl. H04b 1/16
U.S. Cl. 325—395 **3 Claims**

A receiving device for control information formed by a first control signal and a second control signal transmitted after the first signal and having a duration less than the duration of the first signal, where the durations of received signals having the same frequency as the control signals are mea-

sured to generate a first output when the duration exceeds a predetermined time Ts and to generate a second output when the duration exceeds predetermined time Tc less than the time Ts. The duration of the first control signal is longer than



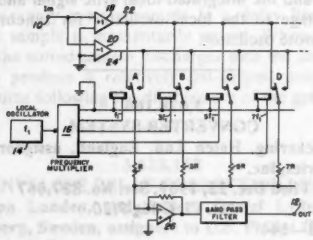
the time Ts, and the duration of the second control signal is less than the time Ts and more than the time Tc. A controlled circuit is triggered to and self-held in the switching-in state in response to the first output and restored in response to the second output.

3,628,154

LOW DISTORTION SIGNAL BAND SHIFTING WITH ON-OFF SWITCHES

Lawrence R. Weill, 455 Point Loma Ave, San Diego, Calif.

Filed May 31, 1968, Ser. No. 733,463
Int. Cl. H04b *1/26*; H03b *1/04*
U.S. Cl. 325—435 **7 Claims**



Simple switches are used for shifting a signal band, f_o, to a new location, f_o+f_1, without distortion. The band is split into two opposed phases, chopped with square waves of frequencies f_1 and odd harmonies $3f_1$, $5f_1$, etc., which are weighted in amplitude by the factors 1, one-third, one-fifth, etc., and are finally added. Unwanted components $3f_1$, $5f_1$, etc., are found to be easily canceled, obviating a difficult filtering problem.

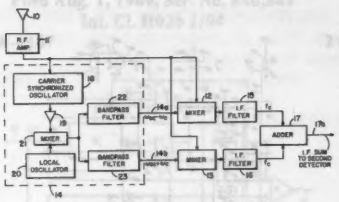
3,628,155

AMPLITUDE MODULATION INTENSIFIER METHOD AND APPARATUS

Anthony G. Muzzi, 6703 Marsh Ave., Huntsville, Ala.

Filed Jan. 3, 1969, Ser. No. 788,821
Int. Cl. H04b *1/26*
U.S. Cl. 325—438 **7 Claims**

An amplitude-modulated RF carrier wave is separately mixed with two phase-locked frequency waves, one lower than the carrier by an amount equal to a desired intermediate frequency, and the other higher by the same amount. The two resulting IF's are added to give an IF output with an improved signal-to-noise ratio over the RF wave. The inventive



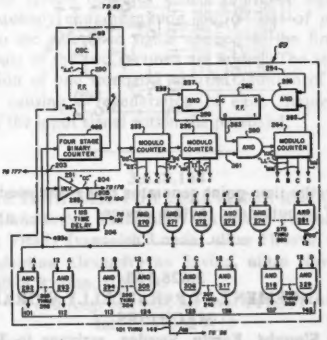
apparatus includes the necessary means for generating the two waves, for mixing, etc.

3,628,156

TIMING LOGIC

James R. Barger, Haddon Heights, N.J., assignor to The United States of America as represented by the Secretary of the Navy

Filed Jan. 3, 1969, Ser. No. 788,862
Int. Cl. H03k *23/00*
U.S. Cl. 328—39 **6 Claims**



Timing logic providing sequential pulses from individual terminals. Modulo N-type counters are cascaded together and provide signals to AND gates so that the AND gates by receiving 12 sequential signals of varying length and sequence may combine the signals in a manner to provide 48 terminals signals in sequence of equal amplitude and duration. Synchronization is obtained to assure that this sequencing remains fixed regardless of turn on states of the equipment.

3,628,157

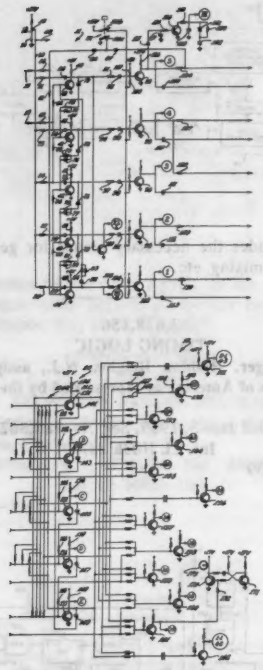
TIME-POINT GENERATOR

Alfred B. Freeman, 20418 Seaboard Road, Malibu, Calif.

Original application Apr. 8, 1968, Ser. No. 719,474, now Patent No. 3,548,065, dated Dec. 15, 1970. Divided and this application Feb. 2, 1970, Ser. No. 7,522
Int. Cl. H03k *1/00*
U.S. Cl. 328—62 **6 Claims**

A time-point generator includes a polystage multivibrator for producing pulse signals of a predetermined frequency and spacing, a logic sequencer controlled by said multivibrator, means connected to the multivibrator for changing the spac-

ing of some of the pulses, and gating means controlled by the output of the multivibrator and by the output of the logic

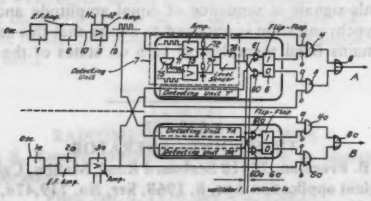


sequencer, the time-point generator being disclosed as forming part of an automatic rhythm device.

3,628,158
ARRANGEMENT AT PARALLELLY WORKING MACHINES

Erik Ivar Sjoquist, Farsta, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Oct. 27, 1969, Ser. No. 869,756
Claims priority, application Sweden, Nov. 15, 1968, 15508/68
Int. Cl. H03k *17/02*
U.S. Cl. 328—71 **7 Claims**

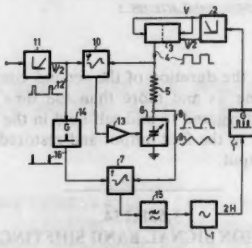


There is disclosed a fail-safe apparatus for supplying clock pulses to parallelly working machines, preferably computers. An oscillator is associated with each machine and is connectable to the respective machine as well as to the adjacent machines via logical circuits. These circuits are controlled by bistable flip-flops which are triggered from frequency sensing devices in such a way that when the frequency of an oscillator for some reason changes the associated flip-flop changes its state and connects the oscillator associated with an adjacent machine to the machine controlled by the defective oscillator.

3,628,159
LOCKING OF TELEVISION SYNCHRONISM GENERATORS

Richard John Godwin Ellis, Cambridge, England, assignor to Pye Limited

Filed Oct. 8, 1969, Ser. No. 864,653
Claims priority, application Great Britain, Oct. 10, 1968, 48,056/68
Int. Cl. H03b *3/06;* **H04n** *5/04*
U.S. Cl. 328—134 **7 Claims**

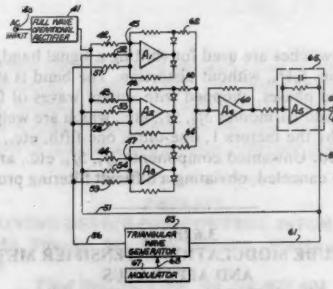


A circuit for synchronizing a local television synchronizing oscillator with a remote one has a second phase discriminator coupled to receive the local and remote synchronizing signals. It generates an output voltage that is applied to a varicap of an integrating circuit that receives the local sync signal so that the time constant varies with phase difference of the signals. A first phase discriminator receives the remote sync signal and the integrated local sync signal and applies a control voltage to the local oscillator for synchronizing it with the remote oscillator.

3,628,160
CONVERTER SYSTEM

John R. Pickering, Hatch End, England, assignor to Dana Laboratories, Inc.

Filed Dec. 22, 1969, Ser. No. 887,067
Int. Cl. G06g *7/20*
U.S. Cl. 328—144 **15 Claims**



A system which may have applied thereto a DC or an AC signal and the output of which is a DC signal which follows substantially a predetermined function. The output signal is caused to follow substantially the predetermined function by application to the input signal of a dither signal which, under some circumstances, may be frequency modulated. In a

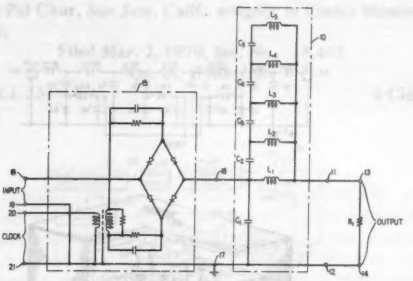
preferred embodiment, the system is an AC to DC RMS converter utilizing operational rectifiers the output of which is applied to a dither generator which produces an output signal having a substantially linear probability distribution function (a triangular wave), and which output is applied as an input signal to the operational rectifiers to vary the conduction level thereof so as to cause the system output signal to more closely follow the square-law curve. In an alternative embodiment, comparators are used instead of operational rectifiers.

3,628,161

ELECTRONIC SAMPLING AND HOLD CIRCUIT

Ronald Lee Earp, Burlington, N.C., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 12, 1970, Ser. No. 18,887
Int. Cl. H03k *17/74*
U.S. Cl. 328—151 **4 Claims**



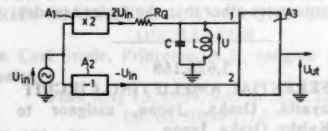
A sample and hold circuit is disclosed in which a gate is enabled to apply a wave sample to a delay line capacitor where the sample is momentarily stored. When the gate is disabled, the stored sample discharges with the line being effective to produce a relatively flat-topped output over a period of time following the disablement of the gate.

3,628,162

ENVELOPE DELAY CORRECTION LINK

Peter Lison Lunden, and Anders Gustaf Lyden, both of Jakobsberg, Sweden, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 1, 1969, Ser. No. 838,161
Claims priority, application Sweden, July 2, 1968, 9115/68
Int. Cl. H03b *3/04*
U.S. Cl. 328—155 **14 Claims**



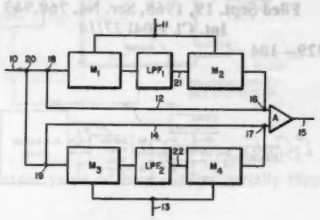
A circuit for correcting nonuniform transmission delay of a television signal has two parallel coupled channels coupled to receive said signal. The first contains a damped resonant circuit, the second a phase inverter. A MOSFET can be the variable damping, while voltage variable diodes can be in the tuned circuit. A rectifier supplies a control voltage from the input signal to the diodes.

3,628,163

FILTER SYSTEM

Anthony D. Heibel, Nunica, Mich., assignor to Ufad Corporation

Filed Aug. 1, 1969, Ser. No. 846,849
Int. Cl. H03b *1/04*
U.S. Cl. 328—167 **2 Claims**



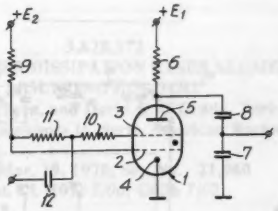
The operation of this electronic filter is based on the interrelation of two similar sections operating upon a complex electric input signal, each section including a first signal multiplier, a low-pass filter, and a second multiplier. Multiplying the input signal by the reference signal in the first multiplier produces two frequency components for each frequency component of the input signal. All the signals that the low-pass filter does not eliminate, are multiplied by the reference signal in the second multiplier. Each signal multiplied in the second multiplier produces two sidebands equally spaced on either side of the reference signal. Another and similar section of the system operates with a reference signal of the same frequency and magnitude, but 9° out of phase with respect to the reference signal applied to the first section. The outputs of the two sections are added. The result is the cancellation of one sideband and the addition of the other sideband causing a regeneration of each frequency component of the input signal within the passband.

3,628,164

FRAME TIME BASE FOR TELEVISION RECEIVERS

Leonid Mikhailovich Tikhomirov, prospekt Yablochkova, 4, kv. 31; Vitally Ivanovich Loban, ulitsa Firsova, 8, kv. 33, and Valentina Alexandrovna Savina, ulitsa Novaya, 108, kv. 3, all of Ryazan, U.S.S.R.

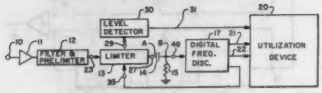
Filed Aug. 1, 1968, Ser. No. 749,391
Int. Cl. H03k *4/12*
U.S. Cl. 328—181 **5 Claims**



A frame time base system for television receivers and the like. The system is built around a cold-cathode glow discharge tube having an anode, a grid, a trigger electrode and a cathode, a first source of positive potential connected to the anode through a first resistor, a capacitive network connected to the anode and the first resistor to form a sawtooth wave generator for the output of the discharge tube, a resistor network connected between the trigger electrode and the grid, a source of synchronizing pulses supplied through the first portion of the resistor network to the triggering electrode and through a second portion of the resistor network to

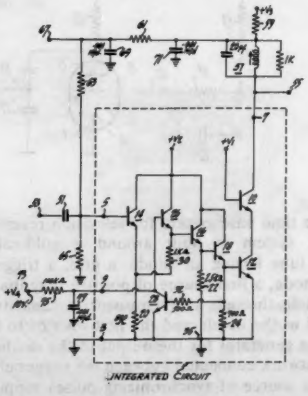
the grid, and a second source of positive potential connected through a second resistor to the resistor network.

3,628,165
DIGITAL FREQUENCY DISCRIMINATOR
William O. Swan, Jr., Sunnyvale, Calif., assignor to Anderson Jacobson, Inc., Mountain View, Calif.
Filed Sept. 19, 1968, Ser. No. 760,943
Int. Cl. H04l 27/14
U.S. Cl. 329—104 **18 Claims**



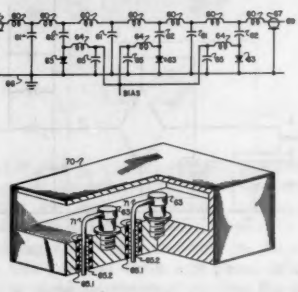
A frequency discriminator with a signal limiter and level detector for digital communication systems using frequency modulation is provided by an arrangement for effectively measuring the period of a frequency modulated signal. A counter sets and resets a first flip-flop in accordance with the frequency shift of the signal within a given range, and sets a second flip-flop for one cycle of the input signal each time the period of the signal is determined to be for a frequency outside that range. The limiter at the input of the discriminator employs an integrating capacitor to set the maximum level of the input signal as a function of the input signal amplitude, and the level detector, set for a predetermined acceptable signal level, is connected to that capacitor. A second integrating capacitor connected in parallel with the first through a blocking diode is provided with a large RC time constant as compared with that of the first integrating capacitor for a long turn-on time, as compared with the turnoff time for the level detector. The second flip-flop set by the discriminator removes an insignificant fixed charge from the first integrating capacitor each time it is set. The charge removal becomes significant only when its average rate exceeds a predetermined level.

3,628,166
WIDE-BAND AMPLIFIER
Jack R. Harford, Three Bridges, N.J., assignor to RCA Corporation
Continuation of application Ser. No. 766,905, Oct. 11, 1968. This application June 3, 1970, Ser. No. 41,755
Int. Cl. H03g 3/30
U.S. Cl. 330—29 **16 Claims**



A wide-band amplifier including a pair of transistors is arranged in a cascode configuration. Input signals are controllably attenuated over a given range of amplitudes by a coupling network to stabilize at a predetermined amplitude those signals applied to the common-emitter transistor of the cascode pair for amplification. Such an arrangement enables the common-base transistor of the transistor pair to develop output signals having significantly less distortion than would be present where input signals of the order of 100 millivolts or so are applied without any attenuation to the common-emitter transistor; it also enables the common-base transistor to maintain an output signal-to-noise ratio substantially greater than would be the case if attenuation were employed throughout.

3,628,167
TRAVELLING WAVE MULTIPLE ELEMENT AMPLIFIER
Marion E. Hines, Weston, Mass., assignor to Microwave Associates, Inc., Burlington, Mass.
Filed June 20, 1969, Ser. No. 835,144
Int. Cl. H03f 3/60
U.S. Cl. 330—53 **6 Claims**



Described are transmission line media and microwave structures for combining a multiplicity of elementary discharge devices (e.g., semiconductor diodes) biased for negative resistance at frequencies in a given band to obtain increased high-frequency power and high-frequency bandwidth of useful operation in that band, of microwave energy propagated in the transmission line media.

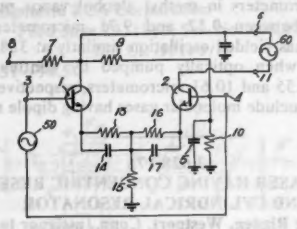
The basic principle involved is to prevent or suppress oscillations in undesired modes of resonance or propagation induced by the use of one or more diodes, by segregating these undesired modes into frequency bands outside the frequency range to be utilized.

Under this principle complex networks containing a large number of resonant loops and having as many resonant or normal modes as there are resonant loops are coupled into a primary transmission line so that the network may oscillate or amplify in the desired mode and each diode contributes an equal share of the total power of the network, but the negative conductance properties of the diodes are substantially ineffective at frequencies other than the desired modes.

3,628,168
DIFFERENTIAL AMPLIFYING CIRCUIT
Yoshio Kobayashi, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Feb. 9, 1970, Ser. No. 9,487
Claims priority, application Japan, Feb. 15, 1969, 44/13827
Int. Cl. H03f 21/00
U.S. Cl. 330—69 **4 Claims**

A differential amplifier having a DC path and an AC path for signal with a common grounding resistor. The DC path having high-ressure elements which compensate the characteristic difference between the amplifier elements. The AC path being connected in parallel with the DC path and having very low impedance value at the high-signal frequencies to

bypass the DC path. As a result, the differential amplifier is not affected by the difference of characteristics between the



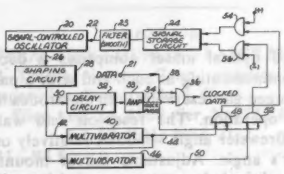
two amplifying elements and shows good sensitivity in the high-frequency region.

3,628,169

DIGITAL DATA DISCRIMINATOR SYSTEM

Sung Pal Chur, San Jose, Calif., assignor to Caelus Memories, Inc.

Filed Mar. 2, 1970, Ser. No. 15,402
Int. Cl. H03b 3/06
U.S. Cl. 331—1 A 4 Claims



A discriminator system is disclosed for qualifying (clocking) digital data signals of inconsistent frequency (phase) by controlling a clock pulse oscillator with the data signal. A signal-controlled oscillator provides clocking pulses and additionally controls the system to provide first and second interrelated test pulses defining test intervals. Phase variations (as resulting from a change in the data signal) are detected by a shift in the time relationship between the pulses of the data signal and the test pulses. The individual test pulses are tested in coincidence with the data signal to provide two distinct coincidence periods, the comparative durations of which indicates any requisite correction. Opposed-polarity signals are supplied to control the oscillator, during the separate coincidence periods thereby affording an integrated signal level for stabilizing the oscillator to generate the clock pulses in phase-locked synchronization with the data signal.

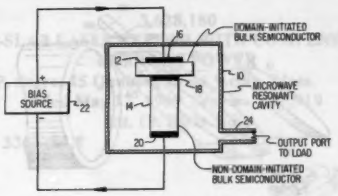
3,628,170

LSA OR HYBRID MODE OSCILLATOR STARTED BY SERIES-CONNECTED GUNN OR QUENCHED MODE OSCILLATOR

Martin Carl Steele, Princeton, N.J., assignor to RCA Corporation

Filed May 13, 1969, Ser. No. 824,222
Int. Cl. H03b 7/14
U.S. Cl. 331—52 6 Claims

Microwave oscillations at the tuned frequency of a given resonant cavity generated by a bulk semiconductor negative differential resistance device operating only in a nondomain initiated mode, such as the hybrid mode or LSA mode, is started by another bulk semiconductor negative differential resistance device operating at the given frequency in a domain initiated mode, such as the transit time mode or the quenched mode. This is accomplished by locating both devices within the given resonant cavity, properly choosing their threshold currents with respect to each other, and applying a certain value of bias current serially through both devices.

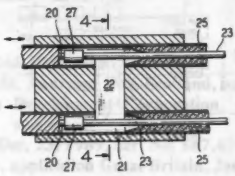


3,628,171

MICROWAVE POWER COMBINING OSCILLATOR CIRCUITS

Kaneyuki Kurokawa, Murray Hill, and Frank Matthieu Magalhaes, Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 7, 1970, Ser. No. 61,913
Int. Cl. H03b 7/14
U.S. Cl. 331—56 10 Claims



A microwave power combining oscillator circuit comprises a plurality of coaxial cables each having a negative resistance diode mounted at one end and a matching dissipative impedance connected across the other end. A midportion of each coaxial cable inner conductor extends along a side of a rectangular cavity resonator. With the inner conductors symmetrically spaced a half wavelength apart along opposite sides of the resonator, the oscillatory outputs of the diodes are combined at a single frequency and transmitted by an output waveguide.

3,628,172

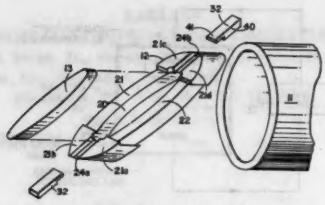
HIGH-POWER DISSIPATION LASER SEGMENT MOUNTING HOLDERS

Edwin Matovich, Brea, and David E. O'Grady, Yorba Linda, both of Calif., assignors to North American Rockwell Corporation

Filed Mar. 19, 1970, Ser. No. 21,060
Int. Cl. H01s 3/00; G02h 7/02
U.S. Cl. 331—94.5 6 Claims

The holders of the present invention are used to maintain the distance between segments of laser material so as to provide a fluid path for a cooling fluid across the surfaces of the laser material segments. The holders are formed in the shape of an elliptical ring having an elliptical opening defined through the center thereof with the ring being adapted to receive an elliptical disc of laser material. The ring is provided with a recessed portion on at least one surface to form a passageway for fluid across the face of the disc of laser material. Spacer means are positioned in recesses on the surface of the elliptical ring to hold each disc of laser material in place and to allow stacking of a plurality of the rings in axial

alignment while maintaining a uniform spacing between a plurality of elliptical discs. The invention described herein

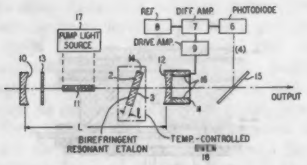


was made in the performance of work under Air Force Contract No. AF33(615)68C-1104.

3,628,173
LASER MODE SELECTION AND STABILIZATION APPARATUS EMPLOYING A BIREFRINGEMENT ETALON

Hans G. Danielmeyer, Matawan, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 28, 1969, Ser. No. 819,887
Int. Cl. H01s *3/10*
U.S. Cl. 331—94.5 **5 Claims**

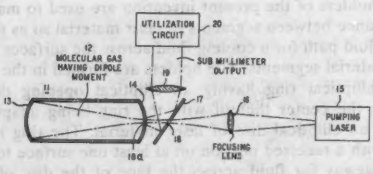


There is disclosed a stabilized single-frequency arrangement for a broadband laser, such as a neodymium ion laser, in which a resonant etalon including birefringent material is disposed in the resonator in the path of the radiation and is tilted to select only one axial mode of oscillation in each of two orthogonal polarizations. In one specific embodiment, the resonator is tuned for maximum intensity of the mode of one polarization in response to a nearly linear intensity-frequency discriminant derived from the mode of the other polarization, which is provided with an operating point on a side of a transmission curve of the etalon.

3,628,174
OPTICALLY PUMPED SUBMILLIMETER-WAVE AND MILLIMETER-WAVE GAS LASERS

Thomas James Bridges, Holmdel, and Tao-Yuan Chang, Middletown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 1, 1970, Ser. No. 24,703
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 **12 Claims**

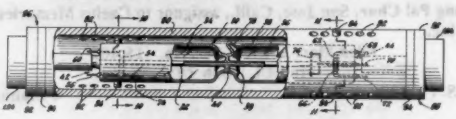


There is disclosed the first optically pumped submillimeter-wave laser. Oscillation is obtained on six pure rotational transitions of wavelength longer than 400 micrometers in methyl fluoride pumped at 9.55 micrometers and on several other pure rotational transitions between 280 micrometers and 687 micrometers in methyl alcohol vapor pumped at wavelengths between 9.52 and 9.71 micrometers. Vinyl chloride gas has yielded oscillation similarly at 388 and 630 micrometers when optically pumped by continuous-wave radiation at 9.55 and 10.61 micrometers, respectively. Other active media include molecular gases having dipole moments.

3,628,175
OPTICAL MASER HAVING CONCENTRIC RESERVOIRS AND CYLINDRICAL RESONATOR

Jameson Dane Rigden, Westport, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Nov. 29, 1963, Ser. No. 326,762
Int. Cl. H01s *3/02*
U.S. Cl. 331—94.5 **13 Claims**

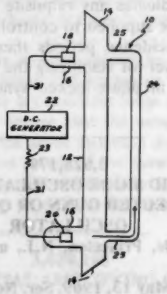


The disclosed optical maser comprises a capillary-size plasma tube communicating at each end with a pair of concentrically arranged gas reservoirs with electrodes therein for direct current operation. The reservoir end walls mount wedge-shaped Brewster angle windows relatively oriented at twice Brewster's angle. Adjustable mirror mounts beyond each window each include a mirror carried by a diaphragm; the mirrors, windows and plasma tube all being in physical alignment.

3,628,176
DIRECT CURRENT GAS LASERS

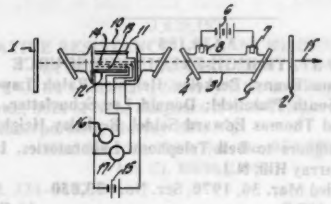
Gustav K. Medicus, 7521 W. Hyland Ave., Dayton, Ohio

Filed Aug. 28, 1964, Ser. No. 392,968
Int. Cl. H01s *3/02*
U.S. Cl. 331—94.5 **12 Claims**



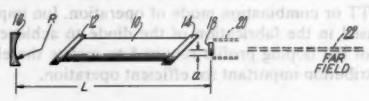
A direct current excited gas laser containing a mixture of two gases having a relatively large molecular mass ratio, and having backflow passage means for the return flow and neutralization of the heavier gas concentrating at the cathode end of the laser because of electrocataphoretic separation of the mixed gases within the laser tube during normal operation.

3,628,177
OPTICAL MODULATION SYSTEM
Jacob M. Hammer, Lawrence Township, Mercer County, N.J., assignor to RCA Corporation
Filed June 29, 1965, Ser. No. 468,078
Int. Cl. H01s 3/10
U.S. Cl. 331—94.5 8 Claims



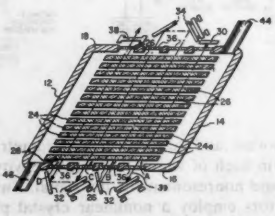
Intensity, color and/or spatial modulation of a laser light beam is accomplished by providing within the resonant cavity of a gas laser, pump means for the gas which comprises at least in part an electron beam, in which the electron beam current, electron beam voltage and electron beam position are independently controllable by means of a first grid between a cathode and anode, a second grid between the first grid and the anode, and deflection plates, respectively.

3,628,178
DIFFRACTIVE COUPLING LASER MIRROR
Edmond B. Treacy, Vernon, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Aug. 14, 1968, Ser. No. 752,692
Int. Cl. H01s 3/08, 3/22
U.S. Cl. 331—94.5 1 Claim



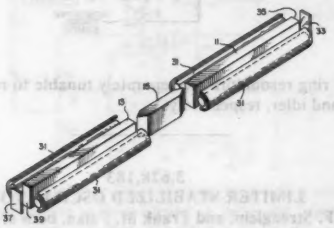
A diffracting coupling mirror is designed to operate with an area less than the dimension of a dominant mode of a laser, thus providing an apodized beam of high resolution and eliminating the need for conventional output coupling; a cooled embodiment as well as circular, cylindrical and annular embodiments are disclosed.

3,628,179
STACKED COMPOSITE PLATE LASER
David W. Cuff, Chepachet, R.I., assignor to American Optical Corporation, Southbridge, Mass.
Filed Mar. 12, 1969, Ser. No. 806,511
Int. Cl. H01s 3/04, 3/05
U.S. Cl. 331—94.5 8 Claims



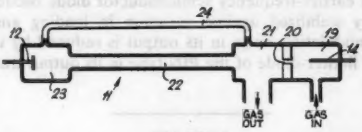
This specification discloses a laser system comprising a plurality of spaced, parallel plates carrying discs of laser glass aligned to form a continuous cavity through a plurality of parallel rows. Means are provided to circulate coolant between the plates to cool the discs of laser glass.

3,628,180
TWO-SLAB LASER SYSTEM WITH COMPENSATION FOR LENS POWER
Joseph P. Segre, 45 Quaboag Road, Acton, Mass.
Filed May 12, 1969, Ser. No. 823,919
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 9 Claims



A glass laser system comprises two slabs of laser glass in the laser cavity. The slab shape together with the thermal gradient induced by the flashlamps causes the slabs to act as cylindrical lenses. A prism is provided in the cavity between the slabs to laterally shift the laser rays to compensate for the cylindrical lens effect.

3,628,181
GAS DISCHARGE LASERS
Arthur Maitland, St. Andrews, Fife, Scotland, assignor to National Research Development Corporation, London, England
Filed Dec. 23, 1969, Ser. No. 887,492
Claims priority, application Great Britain, Jan. 1, 1969, 151/69
Int. Cl. H01s 3/09
U.S. Cl. 331—94.5 11 Claims

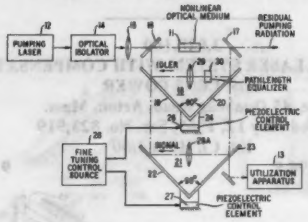


Laser apparatus comprises means for producing a laser discharge in a laser active gas, and reflecting means arranged to generate laser action in the gas pumped by the said discharge, the cathode of the said discharge being constituted in operation by a plasma jet. The plasma jet cathode may be provided by producing a subsidiary discharge, and effecting a flow of the laser active gas from the region of the subsidiary discharge towards the region of the laser discharge to form the said plasma jet.

3,628,182
RING-TYPE PARAMETRIC OSCILLATOR
Arthur Ashkin, Rumson, and John E. Bjorkholm, Middletown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Continuation-in-part of application Ser. No. 736,690, June 13, 1968, now abandoned. This application Mar. 20, 1969, Ser. No. 808,768
Int. Cl. H03f 7/00
U.S. Cl. 331—96 11 Claims

In the parametric oscillators disclosed, first and second ring resonators are disposed to pass pumping radiation in one

direction only and are characterized by a common region in which the nonlinear optical medium is disposed. The first and



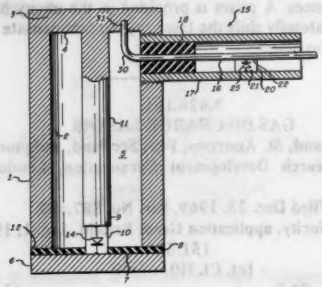
second ring resonators are separately tunable to resonate the signal and idler, respectively.

3,628,183

LIMITER-STABILIZED OSCILLATOR

Harry F. Strenglein, and Frank M. Palka, both of Clearwater, Fla., assignors to Sperry Rand Corporation

Filed Apr. 7, 1970, Ser. No. 26,272
Int. Cl. H03b *3/02*
U.S. Cl. 331—96 **2 Claims**



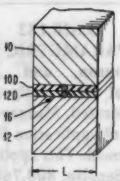
A high carrier-frequency semiconductor diode oscillator is frequency stabilized against variation in loading and amplitude modulation noise in its output is reduced by utilization of a limiter-diode of the PIN type in its output transmission line.

3,628,184

SUPERCONDUCTING OSCILLATORS AND METHOD FOR MAKING THE SAME

William A. Thompson, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of application Ser. No. 15,788, Mar. 2, 1970, now abandoned. This application Mar. 23, 1970, Ser. No. 21,640
Int. Cl. H03b *15/00*
U.S. Cl. 331—107 S **21 Claims**



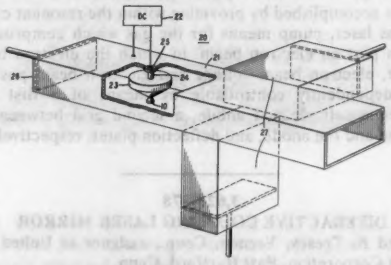
A superconducting oscillator for generating millimeter and infrared radiation and a method for fabricating these oscillators. A Josephson junction (weak link or tunneling junction) is located between electrodes which furnish DC current to the junction and also define a resonant cavity for electromagnetic radiation from the junction. Thus, an internal cavity is provided and increased power outputs over a wide frequency range are possible. The oscillator is produced by spark erosion between the electrodes at liquid helium temperatures, which forms a very small junction and cavity resonator.

3,628,185

SOLID-STATE HIGH-FREQUENCY SOURCE

William Joshua Evans, Berkeley Heights; Ralph Lawrence Johnston, South Plainfield; Donald Lee Scharfetter, Morristown, and Thomas Edward Seidel, Berkeley Heights, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 30, 1970, Ser. No. 23,850
U.S. Cl. 331—107 R **11 Claims**



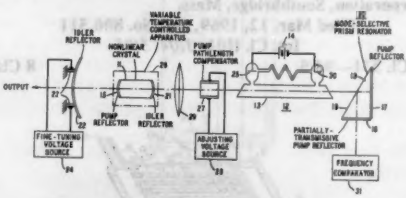
A P+PNN+ semiconductive diode is used as the active element in a solid-state microwave source in either an IMPATT, TRAPATT or combination mode of operation. Ion implantation is used in the fabrication of the diode to achieve close control of the doping profile required to realize the electric field distribution important for efficient operation.

3,628,186

PARAMETRIC OSCILLATOR WITH NONRESONANT SIGNAL

Arthur Ashkin, Rumson, and John E. Bjorkholm, Middletown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of application Ser. No. 728,667, May 13, 1968. This application Mar. 20, 1969, Ser. No. 808,767
Int. Cl. H03f *7/04*
U.S. Cl. 331—107 R **7 Claims**



Continuous-wave and pulsed optical parametric oscillators are disclosed in each of which the optical cavity is resonant for the idler and nonresonant for the signal. Two of the disclosed oscillators employ a nonlinear crystal placed within the pumping laser resonator; and at least one of the pump reflectors is highly transmitting for the signal radiation. One of the oscillators is designed so that oscillation may be achieved on a continuous-wave basis; the other is designed

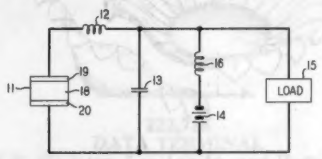
for pulsed or continuous-wave mode-locked operation in which the output consists of a train of short pulses. The other disclosed oscillator employs a nonlinear crystal in a cavity resonant for idler radiation and external to the cavity of the pumping laser. Various arrangements to affect tuning of the oscillators are disclosed.

3,628,187

NEGATIVE RESISTANCE AVALANCHE DIODES WITH SCHOTTKY BARRIER CONTACTS

Bernard C. De Loach, Jr., Murray Hill, and Roger Edwards, Gillette, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Dec. 10, 1969, Ser. No. 883,898
Int. Cl. H03b *7/06*
U.S. Cl. 331—107 R **4 Claims**



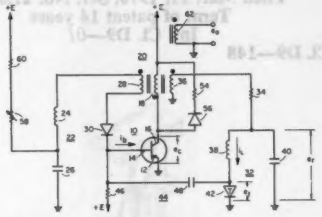
A negative resistance avalanche diode comprises only a bulk semiconductor wafer contained between opposite Schottky barrier contacts.

3,628,188

LC STABILIZED BLOCKING OSCILLATOR WITH INTERNAL TUNNEL DIODE TRIGGER CIRCUIT

Martin Fischman, Wantagh, N.Y., assignor to GTE Laboratories Incorporated

Filed Jan. 2, 1970, Ser. No. 29
Int. Cl. H03k *3/30*
U.S. Cl. 331—112 **11 Claims**



A transistorized pulse generator comprising a first resonant circuit for generating pulses having a precisely controlled width and a second resonant circuit, tunnel diode and differentiator network for precisely controlling the duration of the interpulse period. The first resonant circuit is connected in the base-emitter circuit of the transistor and the second resonant circuit tunnel diode and differentiator network coupled between the collector-emitter and base circuits of the transistor.

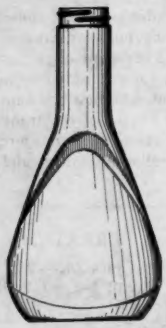
ERRATUM

For Class 240—259 see:
Patent No. 3,626,956

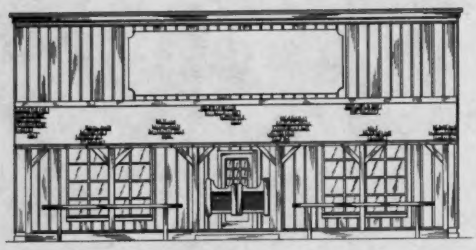
DESIGNS

DECEMBER 14, 1971

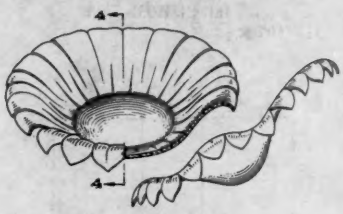
222,712
BOTTLE OR SIMILAR ARTICLE
Jim D. Barker, Kansas City, Mo., assignor to Ethyl Development Corporation, Kansas City, Mo.
Filed Mar. 11, 1970, Ser. No. 21,856
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—148



222,713
WESTERN STORE BUILDING
Charles C. Hicks, Goodlettsville, Tenn., assignor to Lynn's Loretta Western Stores, Inc., Hermitage, Tenn.
Filed Nov. 25, 1970, Ser. No. 26,162
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1

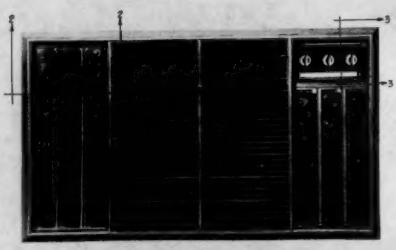


222,714
CHAIR SHELL
Raymond W. Bates, 2121 18th St. NW., Washington, D.C. 20009
Filed May 13, 1970, Ser. No. 22,960
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D15—1

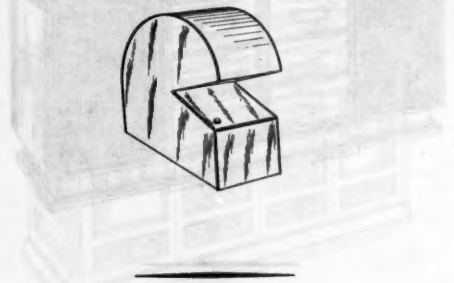


222,715
CHAIR PEDESTAL OR SIMILAR ARTICLE
Raymond W. Bates, Washington, D.C.
Filed May 13, 1970, Ser. No. 22,961
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D15—1

222,716
AIR-CONDITIONING CABINET FRONT OR SIMILAR ARTICLE
Walter W. Hoyle, Fayetteville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed May 1, 1970, Ser. No. 22,748
Term of patent 7 years
Int. Cl. D23—*04*
U.S. Cl. D23—141



222,717
CONSOLE FOR READING IDENTIFYING IMPRINTS ON DOCUMENTS
Robert B. Boyer, 39 Buckley Ave., West Warwick, R.I. 02893, and Samuel F. Marsocci, Jackpine Road, Coventry R. I. 02816
Filed Apr. 8, 1970, Ser. No. 22,323
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

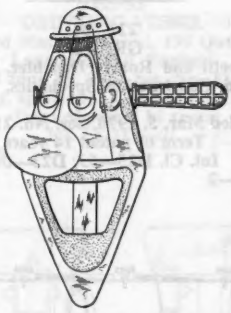


222,718
DATA TERMINAL
Richard K. Singleton, Los Angeles, and Herbert D. Pace, Woodland Hills, Calif., assignors to Western Data Products, Inc., Los Angeles, Calif.
Filed May 27, 1970, Ser. No. 23,172
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

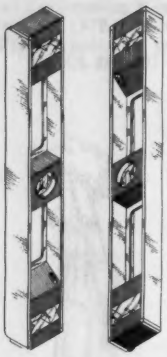
222,719
GOLF PUTTER HEAD
Raymon W. Cook, 1026 Mount Eden, San Antonio, Tex. 78213
Filed Feb. 3, 1970, Ser. No. 21,230
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5

222,720
GOLF CLUB CARRIER
Sidney D. Lapham and Willard Feldscher, Walnut Creek, Calif., assignors to Quintex Products Corporation, Walnut Creek, Calif.
Filed July 23, 1970, Ser. No. 24,095
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5

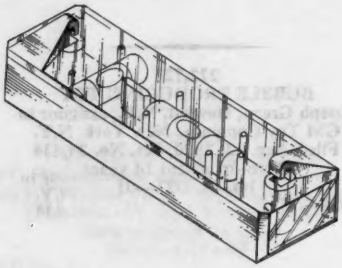
222,721
BUBBLE PRODUCING TOY
Joseph Green, Hewlett, N.Y., assignor to GM Toy Company, New York, N.Y.
Filed Aug. 12, 1970, Ser. No. 24,434
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



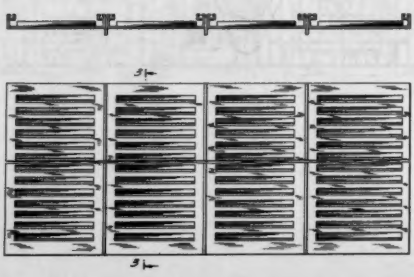
222,722
SPIRIT LEVEL
Seymour A. Ostrager, 1188 Grand Concourse, Bronx, N.Y. 10456
Filed Nov. 6, 1970, Ser. No. 25,851
Term of patent 14 years
Int. Cl. D10—05
U.S. Cl. D52—6



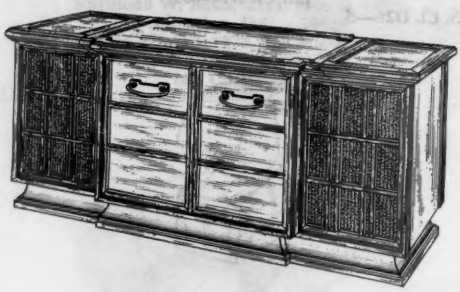
222,723
COMBINED SURFACE AND LINE LEVEL
Seymour A. Ostrager, 1188 Grand Concourse, Bronx, N.Y. 10456
Filed Nov. 6, 1970, Ser. No. 25,855
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D52—6



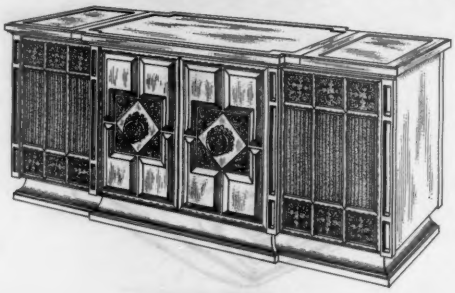
222,724
GRILLE
Patrick Zampetti and Robert Deuchler, Cranford, N.J., assignors to Construction Specialties, Inc., Cranford, N.J.
Filed Mar. 5, 1970, Ser. No. 21,751
Term of patent 14 years
Int. Cl. D25—*03*; D23—*04*
U.S. Cl. D54—2



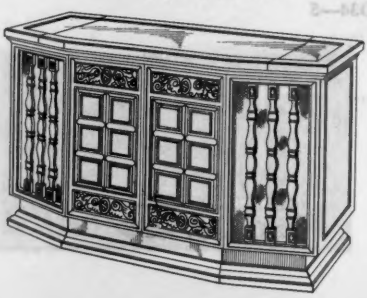
222,725
PHONOGRAPH CONSOLE
William B. Donnelly, Syracuse, N.Y., assignor to General Electric Company
Filed Nov. 10, 1970, Ser. No. 25,909
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4



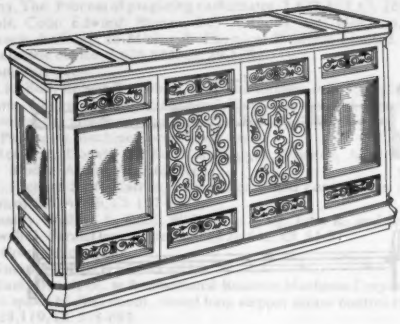
222,726
PHONOGRAPH CONSOLE
William B. Donnelly, Syracuse, N.Y. assignor to General Electric Company
Filed Nov. 10, 1970, Ser. No. 25,910
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4



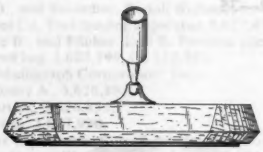
222,727
PHONOGRAPH CONSOLE
William B. Donnelly, Syracuse, N.Y., assignor to General Electric Company
Filed Nov. 12, 1970, Ser. No. 25,941
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4



222,728
PHONOGRAPH CONSOLE
William B. Donnelly, Syracuse, N.Y., assignor to General Electric Company
Filed Nov. 12, 1970, Ser. No. 25,942
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4



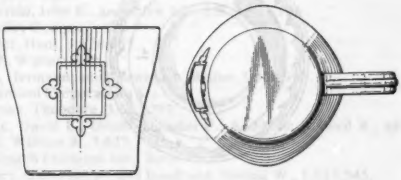
222,729
PEN HOLDER
Richard K. Enseki, Glen Rock, and Michael P. Arnone, Fairview, N.J., assignors to Kreisler Manufacturing Corporation, North Bergen, N.J.
Filed Sept. 4, 1970, Ser. No. 24,852
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—5



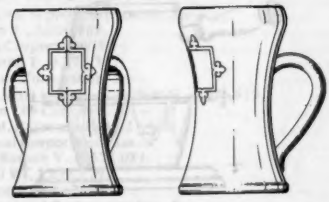
222,730
COMBINED FRYPAN AND LID THEREFOR
Graham J. Aries, Stourbridge, England, assignor to Tower Housewares Limited, Wombourne, Wolverhampton, England
Filed June 3, 1970, Ser. No. 23,279
Claims priority, application Great Britain Dec. 3, 1969
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—1

222,731
CAGE FOR POPCORN POPPER
Robert Gottlieb, New York, N.Y., assignor to Argo-Industries Corporation, Jackson Heights, N.Y.
Filed Aug. 14, 1970, Ser. No. 24,493
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—1

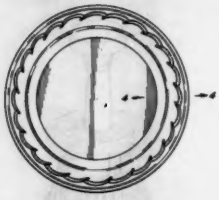
222,732
CUP OR THE LIKE
Robin Jared Stanley Howard, 190 Queen's Gate, London, SW. 7, England
Filed June 22, 1970, Ser. No. 23,606
Claims priority, application Great Britain May 20, 1970
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—9



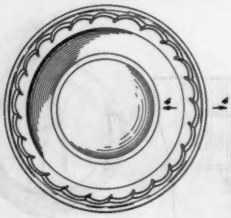
222,733
DRINKING VESSEL
Robin Jared Stanley Howard, 190 Queen's Gate, London, SW. 7, England
Filed June 23, 1970, Ser. No. 23,624
Claims priority, application Great Britain, May 19, 1970
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—9



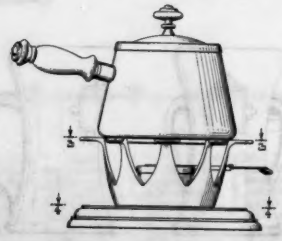
222,734
DISH
Karl Wiedemann, Cherry Hill, N.J., assignor to Melitta, Inc., Cherry Hill, N.J.
Filed Mar. 27, 1970, Ser. No. 22,078
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—15



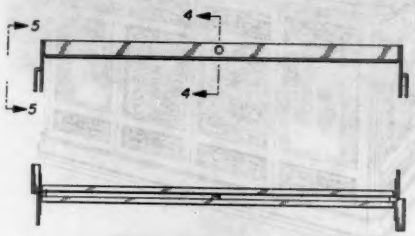
222,735
BOWL
Karl Wiedemann, 519 Fireside Lane, Cherry Hill, N.J. 08034
Filed May 25, 1970, Ser. No. 23,180
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—15



222,736
CHAFING DISH FOR FONDUE OR THE LIKE
Joseph B. Stier, Brooklyn, N.Y., assignor to Styson Inc., New York, N.Y.
Filed May 14, 1970, Ser. No. 22,986
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—15



222,737
FIXTURE HANGER FOR T-BAR CEILINGS
Gary C. Scully, 351 Scenic Drive, La Honda, Calif. 94020
Filed July 27, 1970, Ser. No. 24,133
Term of patent 14 years
Int. Cl. D26—*99*
U.S. Cl. D48—4



222,738
WASTE CONTAINER
Clarke D. Weems, 2021 NW. 58th, Seattle, Wash. 98107
Filed Aug. 26, 1970, Ser. No. 24,708
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D49—35

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF DECEMBER, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-T-O Inc.: *See*—
Garrison, John B., 3,626,974.

Abbate, Franklin W.; and Farrissey, William J., Jr., to Upjohn Company, The. Process of preparing carbamates. 3,627,813, Cl. 260-471.

Abbott, Colin Edward; Barnes, Buy Anthony; and McEntee, John Francis Anthony, to Mining & Chemical Products Limited. Thermoelectric device. 3,626,583, Cl. 29-573.

Abbott, Earl: *See*—
Lickliter, Robert P.; Abbott, Earl; and Reeves, John F.,3,626,650.

Abbotts, William Edward, to Solartron Electronic Group Limited, The. Fluid density measuring apparatus. 3,626,749, Cl. 73-32.

ABC Packaging Machine Corporation: *See*—
Reichert, Donald G.; Petrikin, Earl A.; Pasteris, John A.; and Bluder, Arthur W., 3,626,661.

Abell, Richard S., to Carrier Corporation. Fluid compression system control. 3,626,979, Cl. 137-608.

Abernathy, William J.; Reed, William J.; Sealy, John R.; and Snoddy, Lowell G. Paralel lapping device. 3,626,642, Cl. 51-57.

Abex Corporation: *See*—
Kouns, Herbert H., 3,627,451.

Abraham, Dennis G., to International Business Machines Corporation. Two-speed bi-directional, closed loop stepper motor control circuit. 3,628,119, Cl. 318-685.

Accentile, Inc.: *See*—
Timke, Robert F., 3,627,861.

ACF Industries, Incorporated: *See*—
Rollins, Dallas W.; and Dugge, Richard H., 3,627,384.

Acher, Heinz; and Obenauf, Eberhard, to Licentia Patent-Verwaltungs-G.m.b.H. Hydraulic drive for emergency shutdown of nuclear reactors. 3,627,632, Cl. 176-36.

Ackermann, Hans; Seiler, Herbert; and Meindl, Hubert, to Geigy, J. R., A.G. Mono-and disazo dyestuffs containing triazinylureylene groups. 3,627,749, Cl. 260-153.

Action Concepts Technology, Inc.: *See*—
Grant, Lloyd R., 3,626,874.

Adam, Wolfgang Ernst; Hardy, Alain; Roald, Arnvid Sverre; and Zaki, Wahib Nassif, to Procter & Gamble Company, The. Detergent composition. 3,627,683, Cl. 252-89.

Adamec, Alfred; and Leder, Roland, to Wiener Schwachstromwerke GmbH. Casting mold assembly for casting continuous strip. 3,627,027, Cl. 164-283.

Adams, Ralph D.; and Schindler, Rudolf Richard, to Omark-Winslow Aerospace Tool Co. Tool feeding apparatus. 3,627,436, Cl. 408-13.

Addison, Eugene B.; and Pitcher, Earl R. Portable cooler and support for a pressurized keg. 3,627,399, Cl. 312-351.

Addressograph-Multigraph Corporation: *See*—
Gawron, Stanley A., 3,626,898.
Koch, Robert M., 3,626,833.
Sallach, Max E., 3,627,990.
Sallach, Max E.; Hansen, Russell A.; Heisner, Donald N.; Thornton, Bryce G.; and Weber, Charles F., 3,627,994.
Shelffo, Loren E., 3,627,523.

Adler, Franklin P., to Pullman Incorporated. Pneumatic discharge arrangements for hoppers. 3,627,383, Cl. 302-52.

Adler, Stanford L., Jr.; and Peoples, John C. A., to Technicon Instruments Corporation. Decantation fitting. 3,627,495, Cl. 23-253.

Adrema-Werke G.m.b.H.: *See*—
Janzen, Heinz Dieter, 3,626,847.

Advanced Digital Research Corporation: *See*—
Union, Russell B.; and Nagy, Donald J., 3,628,141.

Aer Corporation: *See*—
Villalobos, Joseph A., 3,627,040.

Affupper, Hans. Method and apparatus for folding and packaging bands of material. 3,627,306, Cl. 270-79.

A.G. fur Industrielle Elektronik Agie Losone B. Locarno: *See*—
Ullmann, Werner; Donati, Franco; and Tortelli, Gianfranco, 3,628,043.

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Kuzin, Mikhail Ilich; Agasarian, Samvel Artushovich; Zhukovsky, Vladimir Davydovich; Volkov, Nikolai Alexeevich; Sachkov, Vladimir Iosifovich; Rukhovets, Isaak Zakharovich; Liventsev, Nikolai Mitrofanovich; and Panfilov, Boris Ivanovich,3,626,926.

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Stockman, Richard F.; and Anderson, William M., 3,626,873.

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Air Reduction Company, Incorporated: *See*—
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Airway Products Corporation: *See*—
Schild, Edwin F., 3,626,870.

Aishima, Itsuho; Sakurai, Hisaya; Kitaoka, Atsushi; and Katayama, Yoshihiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Impact resistant polymer compositions. 3,627,852, Cl. 260-876.

Akanuma, Kaneo: *See*—
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Aktiengesellschaft Brown, Boveri & Cie: *See*—
Buhler, Karl, 3,628,128.

Albertini, Prosper; and De Ruymbecke, Gerard. Flying toy. 3,626,555, Cl. 46-74.

Alberton Limited: *See*—
Held, Peter Erich Julius, 3,626,989.

Alden, Lloyd George, deceased0 (by Alden, Verna R.; executor). Combination flyback curtain and snubber for ripsaw machines and the like. 3,627,000, Cl. 143-159.

Alden, Verna R.: *See*—
Alden, Lloyd George,3,627,000.

Aldenhoff, Bernard J., to Smith, A. O., Corporation. Arc power source. 3,627,977, Cl. 219-131.

Alexander, Ronald Hugh, to National Research Development Corporation. Chopping machines. 3,627,009, Cl. 146-68.

Alexander, Una Pauline Hatton. Apparatus for hanging clothing. 3,627,143, Cl. 211-123.

Allen, Lloyd E.: *See*—
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Allen-Bradley Company: *See*—
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Allenspach, Walter: *See*—
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Alpeda Industries, Inc.: *See*—
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Alquist, Henry E., to Phillips Petroleum Company. Flame colorants. 3,627,489, Cl. 44-1.

Altherr, Russell G., to Amsted Industries, Incorporated. Coupler with means to support a mating pulled-out coupler. 3,627,145, Cl. 213-153.

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Harris, George J., 3,628,142.

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AMF Incorporated: *See—*
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Amori, Joseph A. Shaker bed system. 3,627,277, Cl. 259-59.
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Bertolasi, Robert B.; and Takarada, Eiichi, 3,627,967.
Costello, Richard C.; Jean, Albert J.; and Kucera, William J., 3,627,018.
Dwyer, Howard I., Jr., 3,627,144.
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Anson, George, 3,626,818.
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Rey, Hans-Georg; Wielinger, Hans; and Rieckmann, Peter, to Boehringer Mannheim GmbH. Hydroperoxide diagnostic agents containing a chromogen indicator. 3,627,698, Cl. 252-408.
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Scarpelli, Joseph A., to National Cash Register Company, The. Insolubilization of gelatin-containing film by citrate treatment. 3,627,695, Cl. 252-316.

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Zaffaroni, Alejandro, to Alza Corporation. Ocular insert. 3,626,940, Cl. 128-260.

Zaki, Wahib Nassif: *See—*
Adam, Wolfgang Ernst; Hardy, Alain; Roald, Arnvid Sverre; and Zaki, Wahib Nassif,3,627,683.

Zeewy, Abraham, to Harris-Intertype Corporation. Machine control circuit. 3,627,303, Cl. 270-56.

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Hubner, Hans-Hugo; Walther, Gerhard; Zeile, Karl; Wick, Helmut; and Stockhaus, Klaus,3,627,775.

Zeller, Louis E.; and Patsko, Robert J., to Master Etching Machine Co., Inc. Paddle arrangements for powderless etching machines. 3,627,614, Cl. 156-345.

Zenger, Richard D.; and Lambert, Audie L., to National Can Corporation. Pull means for tear strip. 3,627,167, Cl. 220-54.

Zenith Radio Corporation: *See—*
Beckman, Orval E.; and Klymkiw, Walter, 3,628,146.
Ditthardt, Alfred R., 3,628,150.

Zergenyi, Janos; and Habicht, Ernst, to Geigy Chemical Corporation. Benzofuran-2-carboxylic acids. 3,627,785, Cl. 260-346.2

Zettler, John F., to Data Printer Corporation. Hammer driving circuits for high speed printers. 3,628,100, Cl. 317-137.

Zhukovsky, Vladimir Davydovich: *See—*
Kuzin, Mikhail Ilich; Agasarian, Samvel Artushovich; Zhukovsky, Vladimir Davydovich; Volkov, Nikolai Alexeevich; Sachkov, Vladimir Iosifovich; Rukhovets, Isaak Zakharovich; Liventsev, Nikolai Mitrofanovich; and Panfilov, Boris Ivanovich,3,626,926.

Zickar, Frank R.; and Voytik, Paul, to Westinghouse Electric Corporation. Methods of constructing electrical transformers. 3,626,587, Cl. 29-605.

Ziegenbein, Willi: *See—*
Brockhaus, Rudolf; and Ziegenbein, Willi,3,627,823.

Ziermann, Hermann, to United Aircraft Corporation. Fluid mixer utilizing fluidic timer actuating fluidic amplifier valves. 3,626,963, Cl. 137-81.5

Zimmerman, Robert Paul; and Kessler, Kenneth Quentin, to Deere & Company. Tree shearing and bunching apparatus. 3,627,351, Cl. 280-179.

Zinner, Ira D.; and Sherman, Herbert. Separable denture tray. 3,626,594, Cl. 32-17.

Zinsco Electrical Products: *See—*
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Zizlsperger, Johann: *See—*
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Zoecon Corporation: *See—*
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Zollner, Hermann; Nunn, Robert H.; and Chaffin, Lane Curtis, to Winklhofer, Joh., & Sohne United States of America, Navy. Chain tensioning device Method and means for controlling the thrust in a solid propellant rocket motor. 3,626,697, Cl. 60-204.

Zook, Elmer S.; and Ronn, Paul W., to Reed Rolled Thread Die Co. Truncated through feed thread rolling die for rolling flat rooted threads. 3,626,733, Cl. 72-104.

Zosel, Albrecht: *See—*
Marx, Matthias; Zosel, Albrecht; Spoor, Herbert; Pohlemann, Heinz; and Heinze, Dieter,3,627,659.

Zuccarello, Mario. Electric iron with steam emission under pressure, transformable into a room humidifier. 3,626,615, Cl. 38-77.8

Zuech, Ernest A., to Phillips Petroleum Company. Dimerization of olefins with chromium halide complex catalyst systems. 3,627,700, Cl. 252-429.

Zurakowski, Jan. Motor mount. 3,626,893, Cl. 115-17.

Zust, Armin: *See—*
Schindler, Walter; and Zust, Armin,3,627,769.

Zweig, Emanuel. Ionizing method and apparatus. 3,627,965, Cl. 219-76.

Zytkus, Eugene Henry: *See—*
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LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 14TH DAY OF DECEMBER, 1971

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Bidlack, Harvey D., and W. T. Irvine. Method for the selective control of annual grass. T893,002, 12–14–71, Cl. 71—92.

Continental Oil Co.: *See*—
Hanggi, George J., and Martin. T893,011.

Elitex, Zavody textilniho strojirenstvi: *See*—
Prasil, Vladimir. T893,008.

Firestone Tire & Rubber Co., The: *See*—
Mayes, William G. T893,004.
Moosavian, Hossein. T893,005.

Fisler, John D. Ultrasonic cleaning process and apparatus. T893,001, 12–14–71, Cl. 134—1.

Gatzemeyer, Almond J., and G. B. Grim. Bearing insert retaining means. T893,014, 12–14–71, Cl. 308—237.

General Electric Co.: *See*—
Vrabel, Edward A. T893,012.

Grim, George B.: *See*—
Gatzemeyer, Almond J., and Grim. T893,014.

Hanggi, George J., and T. T. Martin, to Continental Oil Co. Automatic track changing apparatus. T893,011, 12–14–71, Cl. 250—219.

Hauni-Werke Korber & Co. KG: *See*—
Wenninger, Fritz. T893,006.

Imperial Chemical Industries Ltd.: *See*—
Oxley, David F. T893,010.

Irvine, William T.: *See*—
Bidlack, Harvey D., and Irvine. T893,002.

Kibler, Charles J., and B. J. Sublett. Process for producing spinnable, basic dyeable poly(ethyleneterephthalate) copolyesters. T893,013, 12–14–71. Cl. 260—75.

Martin, Theodore T.: *See*—
Hanggi, George J., and Martin. T893,011.

Mayes, William G., to The Firestone Tire & Rubber Co. Block copolymers of butadiene and styrene. T893,004, 12–14–71, Cl. 260—880.

McCormick, Robert M. Process for packaging fibrous bales. T893,007, 12–14–71, Cl. 53—27.

Moosavian, Hossein, to The Firestone Tire & Rubber Co. Process for removing carbon disulfide from an organic solvent by emulsification employing an alcoholic alkali hydroxide. T893,005, 12–14–71, Cl. 260—676.

Nix, Fred D. Self-suspending ammonium polyphosphate suspension fertilizer. T893,009, 12–14–71, Cl. 71—34.

Oxley, David F., to Imperial Chemical Industries Ltd. Production of laminates. T893,010, 12–14–71, Cl. 264—45.

Prasil, Vladimir, to Elitex, Zavody textilniho strojirenstvi. Device for controlling the operation of a winding unit in automatic winding machines. T893,008, 12–14–71, Cl. 242—35.6.

Sublett, Bobby J.: *See*—
Kibler, Charles J. and Sublett. T893,013.

Tuite, Robert J. Fluorescent multicolor additive system. T893,003, 12–14–71, Cl. 96—82.

Vrabel, Edward A., to General Electric Co. Liquid-filled fuse cutout with explosion resistant metal cover. T893,012, 12–14–71, Cl. 337—277.

Wenninger, Fritz, to Haunt-Werke Korber & Co. KG. Blade for cut-off devices in tobacco processing machines and method of making the same. T893,006, 12–14–71, Cl. 83—663.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF DECEMBER, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aerts, Louis J., H. F. J. G. Bairiot, and P. L. Van Asbroeck, to Societe Belge pour l'Industrie Nucleaire, S.A. Centre d'Etude de l'Energie Nucleaire. Fuel element. Re. 27,242, 12–14–71, Cl. 29—400.

Antonov, Elmar A.: *See*—
Voitsekhovsky, Bogdan V., Antonov, Nickolaev, Shoikhet, Dudin, Shevchenko, and Olenkov. Re. 27,244.

Bairiot, Hubert F. J. G.: *See*—
Aerts, Louis J., Bairiot, and Van Asbroeck. Re. 27,242.

Bergeron, Duncan C.: *See*—
Sare, James R., Ropiequet, and Bergeron. Re. 27,243.

Buerkel, David H., to The Connecticut Development Credit Corporation. Polarity reversible current regulator apparatus. Re. 27,245. 12–14–71, Cl. 307—24.

Chrysler Corp.: *See*—
Pace, Carl A., Jr., and Nuss. Re. 27,241.

Connecticut Development Credit Corporation, The: *See*—
Buerkel, David H. Re. 27,245.

Dudin, Vladimir M.: *See*—
Voitsekhovsky, Bogdan V., Antonov, Nickolaev, Shoikhet, Dudin, Shevchenko, and Olenkov. Re. 27,244.

Gronner, Alfred D.: *See*—
Thaler, Sherwood, and Gronner. Re. 27,246.

Institute Gidrodinamiki Sibirskogo Otdelenia: *See*—
Voitsekhovsky, Bogdan V., Antonov, Nickolaev, Shoikhet, Dudin, Shevchenko, and Olenkov. Re. 27,244.

Nickolaev, Valentin P.: *See*—
Voitsekhovsky, Bogdan V., Antonov, Nickolaev, Shoikhet, Dudin, Shevchenko, and Olenkov. Re. 27,244.

Nuss, Christopher: *See*—
Pace, Carl A., Jr., and Nuss. Re. 27,241.

Olenkov, Nickolai F.: *See*—
Voitsekhovsky, Bogdan V., Antonov, Nickolaev, Shoikhet, Dudin, Shevchenko, and Olenkov. Re. 27,244.

Pace, Carl A., Jr., and C. Nuss, to Chrysler Corp. Porting for balanced hydraulic roller pump. Re. 27,241, 12–14–71, Cl. 418—225.

Ropiequet, Richard L.: *See*—
Sare, James R., Ropiequet, and Bergeron. Re. 27,243.

Sare, James R., R. L. Ropiequet, and D. C. Bergeron, by Alta Industries, Inc. Method of manufacturing cellular packing materials. Re. 27,243, 12–14–71, Cl. 161—42.

Shoikhet, Grigory Y.: *See*—
Voitsekhovsky, Bogdan V., Antonov, Nickolaev, Shoikhet, Dudin, Shevchenko, and Olenkov. Re. 27,244.

Simmonds Precision Products, Inc.: *See*—
Thaler, Sherwood, and Gronner. Re. 27,246.

Societe Belge pour l'Industrie Nucleaire, S.A. & Centre d'Etude de l'Energie Nuclearie: *See*—
Aerts, Louis J., Bairiot, and Van Asbroeck. Re. 27,242.

Thaler, Sherwood, and A. D. Gronner, to Simmonds Precision Products, Inc. Electronic liquid measuring system. Re. 27,246, 12–14–71, Cl. 73—304.

Van Asbroeck, Philippe L.: *See*—
Aerts, Louis J., Bairoit, and Van Asbroeck. Re. 27,242.

Voitsekhovsky, Bogdan V., E. A. Antonov, V. P. Nickolaev, G. Y. Shoikhet, V. M. Dudin, A. V. Shevchenko, and N. F. Olenkov, to Institute Gidrodinamiki Sibirskogo Otdelenia. Device for building up high pulse liquid pressures. Re. 27,244, 12–14–71, Cl. 60—54.5.

LIST OF DESIGN PATENTEES

Argo Industries Corp.: *See*—
Gottlieb, Robert. 222,731.

Aries, Graham J., to Tower Housewares Ltd. Combined fry pan and lid therefor. 222,730, 12–14–71, Cl. D44—1.

Arnone, Michael P.: *See*—
Enseki, Richard K., and Arnone. 222,729.

Barker, Jim D., to Ethyl Development Corp. Bottle or similar article. 222,712, 12–14–71, Cl. D9—148.

Bates, Raymond W. Chair shell. 222,714, 12–14–71, Cl. D15—1.

Bates, Raymond W. Chair pedestal or similar article. 222,715, 12–14–71, Cl. D15—1.

Boyer, Robert B., and S. F. Marsocci. Console for reading identifying imprints on documents. 222,717, 12–14–71, Cl. D26—5.

Carrier Corp.: *See*—
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Zampetti, Patrick, and Deuchler. 222,724.

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Deuchler, Robert: *See*—
Zampetti, Patrick, and Deuchler. 222,724.
Donnelly, William B., to General Electric Co. Phonograph console. 222,725, 12–14–71, Cl. D56—4.
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Donnelly, William B., to General Electric Co. Phonograph console. 222,728, 12–14–71, Cl. D56—4.
Enseki, Richard K., and M. P. Arnone, to Kreisler Mfg. Corp. Pen holder. 222,729, 12–14–71, Cl. D74—5.
Ethyl Development Corp.: *See*—
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Gottlieb, Robert, to Argo Industries Corp. Cage for a popcorn popper. 222,731, 12–14–71, Cl. D44—1.
Green, Joseph, to GM Toy Co. Bubble producing toy. 222,721, 12–14–71, Cl. D34—15.
Hicks, Charles C., to Lynn's Loretta Western Stores, Inc. Western store building. 222,713, 12–14–71, Cl. D13—1.
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Howard, Robin J. S. Drinking vessel. 222,733, 12–14–71, Cl. D44—9.
Hoyle, Walter W., to Carrier Corp. Air conditioning cabinet front or similar article. 222,716, 12–14–71, Cl. D23—141.
Kreisler Mfg. Corp.: *See*—
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Melitta, Inc.: *See*—
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Ostrager, Seymour A. Spirit level. 222,722, 12–14–71, Cl. D52—6.
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Pace, Herbert D.: *See*—
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Quintex Products Corp.: *See*—
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Scully, Gary C. Fixture hanger for T-bar ceilings. 222,737, 12–14–71, Cl. D48—4.
Singleton, Richard K., and H. D. Pace. Data terminal. 222,718, 12–14–71, Cl. D26—5.
Stier, Joseph B., to Styson Inc. Chafing dish for fondue or the like. 222,736, 12–14–71, Cl. D44—15.
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Zampetti, Patrick, and R. Deuchler, to Construction Specialties, Inc. Grille. 222,724, 12–14–71, Cl. D54—2.

CLASSIFICATION OF PATENTS

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NOTE.—First number, class; second number, subclass; third number, patent number

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Defensive Publications Applications

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